

## Combined Author Index

Aaronson, H.I.	1413-1432A	Brown, R.	1613-1625A	David, S.A.	2465-2475A	Fruehan, R.J.	1025-1032B
	1433-1463A	Brown, R.D.	1817-1821A		1753-1766A	1079-1081B	
	1465-1478A	Bui, R.T.	487-494B		1767-1782A	205-207B	
	1479-1491A		495-500B		600-603B	879-884B	
	1627-1643A	Burkhart, L.E.	819-826B		2021-2036A	349-355B	
	1343-1380A	Bussiere, J.F.	697-706A	Davidson, D.L.	1603-1612A	Fu, Z.	2333-2337A
	1381-1390A	Byrne, J.G.	2815-2817A	Davis, R.H.	59-68A	Fujishiro, Y.	877-888A
	1391-1411A			Dayan, D.	2125-2129A	Fujita, M.	1547-1556A
	2369-2409A				2131-2136A	Fukuoka, H.	1725-1732A
	845-853B	Cahill, A.E.	819-826B	De Beurs, H.	987-995A	Furuhara, T.	1627-1643A
Abbaschian, R.	37-47B	Cahoon, J.R.	603-608A	De Hoosson, J.Th.M.	987-995A		2369-2409A
Abilizer, D.		Camisotti, R.	87-96B	De Kijlzer, Th.H.	2857-2867A		
Abraham, K.P.	521-527B	Caruso, G.	2867-2976A	DeArdo, A.J.	3101-3114A		
Adams, B.L.	2223-2236A	Cantor, B.	899-912B	DeBroy, T.	449-454B		
Addison, R.C., Jr.	2701-2707A	Carlson, O.N.	2141-2148A	DeHoff, R.T.	2935-2941A	Gallegos, G.F.	1959-1967A
Adler, P.N.	2003-2007A	Carpenter, J.K.	279-283B	Delamore, G.W.	2919-2928A	Ganesan, S.	173-181B
Agren, J.	401-410A	Carpenter, S.H.	1933-1939A	Defino, S.	2109-2114A	Gao, Q.	2087-2089A
Aguayo-Salinas, S.	1877-1884A	Castillejos, A.H.	269-277B	Delph, T.J.	345-352A	Garcia-Cordovilla, C.	2277-2280A
Ahmed, M.N.	404-407B	Chakraborti, N.	71-80B	Demopoulos, G.P.	827-837B	Garnier, F.A.	11-17B
Akata, A.	529-536B	Chan, K.S.	1075-1079B	Deng, J.	873-878B	Gauhe-Escard, M.	1073-1082A
Akbasoglu, F.C.	889-893A		69-80A	Denike, K.K.	3063-3074A	Geiles, D.S.	1065-1071A
Aldykiewicz, A.J., Jr.	2363-2367A		81-86A	Desclaux, P.	861-865B	1853-1861A	
Allem, R.	3115-3125A			Dewald, D.	241-2417A	Génin, J.-M.R.	2083-2086A
Altstetter, C.J.	3215-3220A			Dewing, E.W.	2609-2615A	German, R.M.	1325-1327A
	365-372A	Chan, S.-W.	2299-2307A		861-865B	2531-2538A	
Anagbo, P.E.	637-648B	Chang, E.	715-722B	Dhindaw, B.K.	285-294B	Geva, S.	743-751B
Anand, L.	353-364A	Chang, K.-M.	3027-3028A	Dixit, G.	231-239A	Ghosh, M.K.	402-404B
Anand, S.	402-404B	Charalambides, P.G.	2419-2429A	Dodd, R.A.	1839-1846A	Gibson, E.D.	2249-2255A
Angelu, T.M.	2097-2107A	Chatterjee, S.K.	2597-2598A			Gieske, J.H.	1885-1889A
Ankem, I.	1645-1654A	Chattopadhyay, S.	621-627B		1847-1851A	Gill, S.C.	377-385B
Annavarapu, S.	3237-3256A	Chattopadhyay, S.K.	2597-2598A		1863-1867A	Giovannoli, B.	260-263A
Antolovich, S.D.	2169-2177A	Chen, F.-S.	2363-2367A		1883-1886A	Glaws, P.C.	511-519B
Anyalebechi, P.N.	649-655B	Chen, H.	1133-1141A	Dogan, B.	1177-1191A	Godsell, A.J.	217-228B
Apelian, D.	3237-3256A	Chen, J.H.	313-320A	Doward, R.C.	255-256B	Gogia, A.K.	627-639A
Araujo, C.	2459-2463A		321-330A	Dravid, V.P.	2399-2415A	Gokhale, A.B.	609-625A
Asaki, Z.	19-25B	Chen, Q.	653-665A	Drothong, W.D.	1885-1888A	Gokhale, A.M.	1201-1207A
Asaro, R.J.	117-134A	Chen, T.T.	935-943B	Druy, W.J.	1201-1207A	Goldenstein, H.	1193-1199A
Ashbee, K.H.G.	2599-2601A	Chene, J.	229-238B	Duan, S.	783-790B	Goldstein, J.I.	1465-1478A
	253-255A	Cheng, L.	455-464A	Duffy, J.	1161-1175A	Gonsalves, J.M.	1901-1910A
Asthana, R.	2073-2082A		2857-2867A	Duquette, D.J.	2967-2976A	Goto, S.	1911-1919A
Asundi, M.K.	2897-2903A	Choi, Y.C.	13-26A	Dutrizac, J.E.	935-943B	Graf, A.	87-94A
Awakura, Y.	251-258B	Chiba, Y.	19-25B	Dwarakadasa, E.S.	229-238B	Granger, D.A.	205-212A
Axtell, S.C.	2141-2148A	Chieu, C.F.	715-722B		3171-3186A	205-212A	
		Chiu, B.A.	2585-2596A			205-212A	
		Chiu, L.H.	3257-3258A			205-212A	
		Cho, K.	1161-1175A			205-212A	
		Cho, S.-A.	87-96B	Eagar, T.W.	3039-3047A	Gray, G.T., III	95-105A
		Cho, T.R.	733-741B	Earlam, M.R.	599-600B	Gray, N.B.	987-996B
		Cho, W.	641-651A	Edmonds, D.V.	889-893A	657-664B	
		Choi, H.S.	919-923A	Edwards, G.R.	1527-1540A	Grewal, G.	1645-1654A
		Choi, I.D.	2601-2605A	El-Kaddah, N.	475-485B	Griffin, J.A.	2137-2139A
		Choi, J.	2513-2520A	Elezer, D.	589-598B	Griffin, R.D.	1853-1861A
		Chou, J.S.	919-923A	Ellner, M.	1251-1259A	Grill, A.	1063-1073B
		Christian, J.W.	1891-1899A	Embry, J.D.	1669-1672A	Gronig, O.	2047-2058A
			767-779A	Emiliani, M.	2565-2575A	Grossbeck, M.L.	2585-2596A
			799-803A	Enomoto, M.	1613-1625A	Grushko, B.	2869-2879A
			1083-1095A	Eriksson, G.	1013-1023B	Gu, H.	717-724A
		Christodoulou, N.	205-212A	Evans, F.	11-17B	725-732A	
		Chu, M.G.	205-212A	Evans, A.G.	2419-2429A	Gu, M.	273-277A
			205-212A	Evans, J.W.	59-69B	Gu, N.	2282-2286A
			473-488A	Eylon, D.	191-203B	Guilemany, J.M.	543-547B
		Cliff, G.	1273-1286A		3127-3136A	Guo, Y.	895-899A
		Clough, R.B.	831-835A			Guo, Z.X.	537-541B
		Clyne, T.W.	2747-2757A			Gupta, S.K.	2957-2966A
		Cochrane, R.C.	377-385B			867-872B	
		Cohen, M.	1527-1540A				
			805-809A				
			2288A				
			2749-2765A				
			1493-1507A				
			2609-2610A				
			1663-1674A				
			977-985B				
			2299-2307A				
			1817-1821A				
			289-303A				
			2159-2163A				
			2701-2707A				
			258-268B				
			1493-1507A				
			2609-2610A				
			1391-1411A				
			777-787B				
			777-787B				
			135-139B				
			743-751B				
			345-352A				
			549-558B				
			1941-1949A				
			2233-2237A				
			295-302B				
			5-9B				
			2109-2114A				
			959-960B				
			3063-3074A				
			2709-2715A				
			43-45A				
			949-958A				
			1941-1949A				
			204-206A				
			1049-1061B				
			3063-3074A				
			1951-1957A				
			2149-2154A				
			2709-2715A				
			43-45A				
			1941-1949A				
			204-206A				
			217-228B				
			2449-2458A				
			239-249B				
			2477-2488A				
			855-860B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				
			831-835A				
			2357-2361A				
			1877-1884A				
			135-139B				
			141-142B				
			153-172B				
			733-741B				
			1697-1708A				
			303-305B				
			1479-1491A				
			1719-1723A				

Henein, H.	761-770B	Kobayashi, H.	667-671A	Ma, H.	313-320A	Nam, S.W.	2729-2737A
Henshall, G.A.	3085-3100A	Kocak, M.J.	2943-2955A	Ma, R.	321-330A	Nandedkar, R.V.	3033-3038A
Hernandez-Morales, B.	723-731B	Koike, J.	1799-1808A	Maccagno, T.M.	3115-3125A	Nandy, T.K.	627-639A
Hicks, P.D.	365-372A	Kolle, T.	479-488A	MacEwen, S.R.	1083-1095A		609-625A
Higashi, K.	2957-2966A	Kondo, Y.	19-25B	MacKay, R.A.	381-388A		559-566B
Hillert, M.	1673-1680A	Kongolo, K.	239-249B	Maeda, M.	1081-1084B	Nassaralla, C.	1079-1081B
	2759-2776A	Konitzer, D.G.	1579-1587A	Mahmood, S.T.	121-129B	Nathal, M.V.	611-620B
	2777-2787A	Koon, N.C.	2805-2814A	Mahon, G.J.	1655-1662A	Ni, H.	295-302B
	303-312B	Korpela, S.A.	45-57A	Maiti, A.K.	1319-1322A	Nohmi, S.	2201-2208A
Hills, C.R.	404-406B	Koss, D.A.	135-143A	Majima, H.	251-256B	Noordhuis, J.	1287-1298A
Hirao, M.	2465-2475A	Koul, A.K.	3115-3125A	Makabe, C.	839-844B	North, T.H.	579-587B
Hirono, S.	1725-1732A	Koyama, K.	689-695B	Makel, D.D.	3127-3136A	Notis, M.R.	2309-2315A
Hirth, J.P.	639-644B	Kozuka, Z.	529-536B	Malpertu, J.L.	389-399A	Nourbakhsh, S.	2881-2889A
Hlava, P.F.	2539-2545A	Krafick, W.J.	1745-1751A	Malvin, D.J.	697-706B		213-219A
Hofman, G.L.	2465-2475A	Krauss, G.	1493-1507A	Mannan, S.K.	2179-2188A	Nowotny, H.	3021-3026A
Holmes, J.W.	517-528A	Krueger, D.D.	959-970A	Manor-Minkovitz, E.	1251-1259A	Nóñez, C.	259-268B
Holt, J.B.	1863-1870A	Kucharski, M.	707-714B	Marder, A.R.	1021-1035A		11-17B
Hosford, W.F.	1209-1222A	Kulincski, G.L.	1839-1846A	Margolin, H.	273-277A		
Howe, J.M.	567-577B		1847-1851A	Martinez, E.R.	3075-3084A		
Howe, M.J.	87-94A	Kum, D.W.	1853-1861A	Martins, G.P.	2003-2007A	Ochiai, S.	1901-1910A
Hsu, T.Y.	2369-2409A	Kumar, K.S.	2729-2737A	Masuda, H.	2881-2889A	O'Donnell, R.G.	1911-1919A
Hu, H.S.	811-816A	Kumar, P.	2179-2188A	Mataya, M.C.	213-219A	Ogawa, O.	744-748A
Hu, X.	2829-2837A	Kurz, W.	260-263A	Mattock, D.K.	27-35B	Oh, J.K.	791-793B
Huang, C.Y.	3075-3084A		1311-1318A	Matsuda, F.	2701-2707A	Ohmori, Y.	455-461B
Huang, J.S.	257-260A	Kusunoki, K.	547-555A	Matsuoka, S.	97-104B	Ohtani, H.	877-888A
Huang, S.	1959-1967A	Kwon, D.	117-134A	Matthew, S.P.	105-109B	Oishi, T.	19-25B
Huang, S.-C.	873-878B			Martins, G.P.	475-485B	Oka, M.	845-851A
Huang, W.	959-970A			Masuda, H.	2189-2199A	Oguchii, S.	877-888A
Hutchison, S.G.	2115-2123A	Lahm, C.E.	517-528A	Mataya, M.C.	1969-1987A	Okamoto, H.	1799-1808A
Hwang, K.H.	406-408B		1863-1870A	Mazdiyasi, S.	2513-2520A	Okazaki, M.	2201-2208A
	2815-2817A		1871-1876A	Matthews, D.B.	3221-3236A	O'Keefe, T.J.	2243-2248A
Ijiri, Y.	529-538A	Lalli, L.A.	3101-3114A	Matsuda, F.	2189-2199A	Olson, D.L.	2601-2605A
Ilegbusi, O.J.	183-190B	Lally, B.	761-770B	Mattioli, D.K.	135-139B	Olson, G.B.	475-485B
Imam, M.A.	753-760B	Landes, J.D.	1097-1104A	Matuszyk, W.	141-151B	Olson, G.B.	2513-2520A
Immarigeon, J.-P.	2891-2896A	Lapides, M.E.	1989-1996A	Maxwell, P.B.	153-172B	Olson, G.B.	805-809A
Inagaki, I.	3115-3125A	Lasch, W.A.	2209-2214A	McAfee, A.J.	733-741B	2749-2765A	
Inoue, Y.	1733-1744A	Last, H.R.	557-565A	McKelliget, J.W.	2967-2976A	Øverlie, H.-G.	677-687B
Irona, G.A.	5-11A	Lavernia, E.J.	1785-1789A	McMasters, O.D.	289-303A	Osamura, K.	2243-2248A
Ishida, K.	997-1003B	Lawley, A.	3237-3256A	Mei, Z.	3137-3152A	Ostenson, J.E.	971-977A
Itou, K.	845-851A	Leckie, F.A.	3215-3220A	Menon, E.S.K.	1627-1643A	Otsuka, K.	2249-2255A
Izumi, O.	205-207B	Lee, D.H.	455-461B	Merchant, D.	1209-1222A	Ouellet, R.	2669-2678A
	107-115A	Lee, E.-S.	1021-1035A	Merchant, S.M.	2789-2794A	487-494B	
Jacob, K.T.	521-527B	Lee, E.H.	1037-1051A	McClintock, F.A.	1901-1910A	495-500B	
	559-566B	Lee, E.U.	741-744A	McCormick, P.G.	1911-1919A	Pak, H.-r.	517-528A
James, M.R.	2701-2707A	Lee, E.Y.	1783-1785A	McEvily, A.J.	2717-2727A	Pak, J.J.	1863-1870A
Jansson, B.	404-406B	Lee, H.-K.	2577-2583A	McGilligan, J.W.	289-303A	Pande, C.S.	1871-1876A
Jena, B.C.	463-474B	Lee, H.J.	1627-1643A	McLean, A.	3137-3152A	Pandey, A.B.	2891-2896A
Jeng, H.W.	3257-3258A	Lee, H.Y.	1133-1141A	McMasters, O.D.	2249-2255A	Panek, Z.	707-714B
Jensen, C.L.	421-430A	Lee, J.-H.	919-923A	Mei, Z.	279-288A	Panigrahy, S.C.	463-474B
Jesion, L.	2829-2837A	Lee, J.-L.	2037-2045A	Michal, G.M.	3153-3164A	Papangelakis, V.G.	827-837B
Jin, Q.	2637-2641A	Lee, J.D.	345-352A	Michaud, V.	2059-2072A	Papazian, J.M.	39-43A
Johnson, D.L.	3257-3258A	Lee, J.K.	2521-2530A	Merchant, D.J.	387-400B	401-410A	
Johnson, G.C.	3011-3019A	Lee, T.C.	673-682A	Mika, T.	2355-2361A	411-420A	
Johnson, W.L.	2333-2337A	Lee, T.C.	2411-2417A	Meshii, M.	1799-1808A	2009-2019A	
Jolles, M.I.	1719-1723A	Lee, Y.W.	2437-2447A	Meyers, M.A.	707-716A	845-853B	
Jonas, J.J.	2985-3000A	Legoux, J.G.	715-722B	Michal, G.M.	279-288A	Pante, C.S.	349-355B
	153-164A	Legzdina, D.	2489-2496A	Michaud, V.	3135-3164A	Pandey, A.B.	2891-2896A
Jones, J.H.	331-343A	Lei, T.C.	2155-2158A	Michel, D.J.	441-446A	Panek, Z.	2089-2090A
	697-706A	Leng, Y.	503-505A	Mika, L.J.	499-500A	Panigrahy, S.C.	707-714B
Joshi, A.	697-706B	Lerch, B.A.	2159-2168A	Mimaki, T.	387-400B	Papangelakis, V.G.	463-474B
	2817-2821A	l'Espérance, G.	3115-3125A	Min, D.J.	1025-1032B	Papazian, J.M.	39-43A
Joshi, A.	2829-2837A	Levy, A.	2489-2496A	Miracle, D.B.	539-545A	Park, H.-r.	401-410A
	1033-1047B	Li, D.	411-420A	Misra, R.S.	2089-2090A	Park, J.J.	2029-2039A
Joshi, Y.		Li, F.Z.	3260-3264A	Misra, A.	3137-3152A	Park, K.H.	349-355B
Kacar, A.S.	231-239A	Li, G.F.	1433-1463A	Misra, R.D.K.	441-446A	Park, K.-G.	665-675B
Kajihara, M.	2777-2787A		1479-1491A	Mitchell, A.	559-566B	Park, K.-H.	465-477A
Kale, G.B.	2897-2903A		503-505A	Mitchell, M.R.	621-627B	Park, K.-T.	2323-2332A
Kalkur, T.S.	2459-2463A	Li, H.	579-587B	Mitteiladt, R.	723-731B	Park, K.-T.	2605-2608A
Kaneshiro, H.	667-671A	Li, H.T.	1133-1141A	Mittemeijer, E.J.	1589-1593A	Parkin, D.M.	1015-1019A
Kang, M.	2282-2286A	Li, Z.	717-724A	Mittemeijer, E.J.	111-120B	Parthasarathy, T.A.	2155-2158A
Kapoor, R.R.	3039-3047A	Liang, F.L.	725-732A	Mittemeijer, E.J.	2857-2867A	Patak, A.	449-454B
Karnowsky, M.M.	1885-1898A	Liaw, P.K.	2881-2889A	Mittemeijer, E.J.	13-26A	Pattisson, F.	37-47B
Kassner, M.E.	3085-3100A	Lin, H.T.	213-219A	Mittemeijer, E.J.	189-204A	Patterson, B.R.	2137-2139A
Katagiri, K.	667-671A	Lin, S.T.	529-538A	Mittemeijer, E.J.	901-912A	Pearson, D.D.	381-388A
Kattnier, U.R.	2747-2757A	Liu, Y.L.	2585-2596A	Mittemeijer, E.J.	2355-2361A	Pedraza, D.F.	1809-1815A
Kawasaki, Y.	547-555A	Liu, Y.	567-574A	Mittemeijer, E.J.	1049-1061B	Pehlitz, R.D.	357-375B
Kerr, H.W.	979-986A	Liu, H.W.	987-996B	Mohamed, F.A.	2605-2608A	Peltton, A.D.	1997-2002A
	2009-2019A	Liu, S.	987-996B	Mohr, T.	3165-3169A	Peng, S.W.	567-574A
Kesternich, W.	3033-3038A	Liu, S.K.	1020-1032B	Mohr, T.	231-239A	Pesci, B.	419-427B
	279-288A		1479-1491A	Morishita, T.	919-923A	Peters, E.	251-258B
Khan, S.A.	859-875A		1509-1515A	Morris, J.E.	1725-1732A	Peters, P.N.	257-260A
Khera, S.K.	2897-2903A		1517-1525A	Morris, J.G.	2679-2685A	Petersen, K.	221-230A
Kikuchi, M.	831-835A	Liu, T.F.	1891-1899A	Morris, P.R.	208-209A	Philip, Z.G.	1005-1011B
Kim, C.T.	673-682A		1567-1574A	Morris, P.R.	2223-2236A	Pichta, M.R.	673-682A
Kim, J.W.	741-744A	Liu, W.	2282-2286A	Mortensen, A.	2265-2275A	Poinier, D.R.	173-181B
Kim, K.S.	2729-2737A	Liu, Y.	2137-2139A	Mortensen, A.	2268-2272A	Porter, D.L.	517-528A
Kim, M.S.	107-115A	Llorca-Isern, N.	895-899A	Mortensen, A.	2257-2263A	Powers, W.O.	1863-1870A
Kim, N.J.	683-695A	Lohne, O.	221-230A	Moser, Z.	2287-2291A	Prasad, P.M.	1871-1876A
Kim, S.J.	2655-2668A	Loretto, M.H.	373-379A	Muir, O.M.	707-714B	Pratt, J.N.	145-151A
Kim, Y.G.	741-744A	Lotrim, G.W.	1579-1587A	Munir, Z.A.	439-448B	Press, F.	61-620B
	1681-1688A		831-835A	Munir, Z.A.	567-577B	Priestner, R.	415-418B
King, A.H.	2363-2367A	Louis, E.	575-588A	Murty, K.L.	3001-3010A	Pugh, J.W.	2547-2553A
	2431-2436A	Lu, Y.C.	2277-2280A	Nagpal, P.	2281-2282A	Puls, M.P.	2209-2214A
Klimker, H.	2125-2129A	Lucas, G.E.	2459-2463A	Najjar, F.M.	387-400B	Pussegoda, L.N.	153-164A
Klukens, A.O.	2047-2058A	Luetjering, G.	1105-1119A	Nakagawa, Y.G.	1989-1996A	Pyun, S.-I.	2577-2583A
Klorovsky, G.A.	479-488A	Lukasak, D.A.	95-105A	Nakazawa, Y.	2355-2361A	Qiu, C.	1673-1680A
Knott, J.F.	2977-2983A	Lyman, C.E.	2309-2315A				

Qiu, X.	1663-1867A	Seal, T.	419-427B	Thompson, A.W.	641-651A	Wu, T.B.	2815-2817A
Quin, B.A.	2929-2934A	Sedy, E.B.	1033-1047B		925-933A	Wynnyckyj, J.R.	27-35B
		Seetharaman, V.	1299-1310A		1733-1744A		
		Seitzman, L.E.	1839-1846A		455-464A		
		Seley, M.	2759-2776A		465-477A		
Raghavachary, S.	2539-2545A	Sen Gupta, S.P.	2597-2598A	Thompson, M.S.	2679-2685A	Yadav, R.N.	2073-2082A
Rajan, K.	2323-2332A		1319-1322A	Thompson, S.W.	1493-1507A	Yafuso, T.	667-671A
Remachandran, S.	2317-2322A		1327-1330A	Tian, H.	241-252A	Yamazaki, M.	547-555A
Ramanan, N.	521-527B	Senanayake, G.	439-448B	Tian, Q.	783-790B	Yang, Q.M.	853-858A
Ramaswami, B.	2505-2511A	Shahinian, P.	177-187A		131-133B	Yang, W.S.	2815-2817A
Ramesh, R.	2497-2504A	Shau, B.J.	1133-1141A	Tien, J.K.	753-755A	Yang, Z.	2717-2727A
Rammerstorfer, F.G.	683-695A	Shamsuddin, M.	611-620B	Tissier, A.M.	753-756A	Yao, J.	603-608A
Randie, V.	935-948A	Shekhar, R.	191-203B	Tokonami, M.	2669-2678A	Yao, S.	529-536B
Rankin, W.J.	2215-2221A	Shen, C.H.	1261-1271A	Tomita, Y.	2739-2746A	Ye, J.	269-2678A
Rao, J.	885-897B	Shen, X.P.	2547-2553A		2555-2563A	Yin, F.	2282-2286A
Happaz, M.	1322-1324A	Shewmon, P.G.	1261-1271A	Tóth, L.S.	2985-3000A	Yin, H.	373-379A
	749-753A	Shiflett, G.J.	1413-1420A	Trivedi, R.	1299-1310A	Yoo, M.H.	2431-2436A
	1753-1766A		1343-1380A		1311-1318A		2521-2530A
	1767-1782A	Shigeno, Y.	677-687B	Tsugui, K.	251-258B	Yoon, J.K.	49-57B
Rath, B.B.	1143-1149A	Shimodaira, M.	2189-2199A	Tsutsumi, J.	3165-3169A		665-675B
Ravichandran, K.S.	2891-2896A	Shin, D.H.	2729-2737A	Tuncu, N.	2919-2928A	Yoshizawa, H.	1989-1996A
Ray, R.K.	3171-3186A	Shinozaki, K.	1287-1298A	Turkoglu, H.	771-781B	Yost, F.G.	1885-1889A
Ray, S.	2073-2082A	Shiu, C.K.	1433-1453A			Yu, H.	537-541B
Raymond, E.L.	1705-1717A	Sichen, D.	313-320B			Yue, S.	153-164A
Rehn, L.E.	1793-1808A	Sinkovich, G.	449-458B	Ule, R.L.	1033-1047B	Yukinobu, M.	791-793B
Reiso, O.	1885-1895A	Simmons, G.W.	273-277A	Underwood, E.E.	1193-1199A		
Rémy, L.	3093-3094A	Simonen, E.P.	1053-1063A	Upadhyay, G.	997-1005A	Zabala, R.J.	3063-3074A
	949-958A	Singh, T.	3167-3199A	Vandermeer, R.A.	1143-1149A		1951-1957A
Revoilevski, A.	2308-2315A	Sisk, R.C.	257-260A	Ushio, M.	3221-3236A		2149-2154A
Reynolds, W.T., Jr.	1433-1448A	Smit, D.R., Jr.	1933-1939A	Uwakweh, O.N.C.	589-602A		2709-2715A
	1473-1474A	Smith, G.A.	2323-2332A	Uz, M.	2929-2934A	Zabdyr, L.	707-714B
	1343-1380A	Smith, G.W.	837-844A			Zacharia, T.	600-603B
	2368-2409A	Smith, H.H.	499-500A			Zakulski, W.	707-714B
Rhee, K.I.	341-347B	Smith, R.W.	2919-2928A	van der Pers, N.M.	2857-2867A	Zhang, G.Y.	1509-1515A
	321-330B	Smith, S.D.	1559-1569A	Vander Sande, J.B.	2749-2765A	Zhang, J.	1517-1525A
	331-340B	Snead, C.L., Jr.	1121-1131A	Vandermeer, R.A.	1143-1149A	Zhang, W.	2243-2248A
Rhodes, C.G.	1585-1593A	Soboyejo, W.O.	2977-2983A	Varma, S.K.	500-503A		3260-3264A
Rhodes, E.	27-35B	Socie, D.F.	3215-3220A	Vassiliou, M.S.	1588-1593A	Zhao, G.	783-790B
	2485-2496A	Sohn, H.Y.	341-347B	Vasudevan, V.K.	2655-2668A		131-133B
	575-588A		945-958B	Vedula, K.	279-288A		
	2957-2966A		959-966B	Vedula, K.	2943-2955A	Zhao, J.	2237-2241A
Riedl, R.	264-268A	Somers, M.A.J.	321-330B	Velder, M.	87-98B	Zhao, Y.-F.	997-1003B
Riendesau, M.P.	1960-1977A		331-340B	Venkatesan, V.	3001-3010A	Zhu, H.	500-503A
Rigaud, M.	463-474B	Sommerville, I.D.	901-912A	Venugopalan, D.	913-918A	Zhu, R.	3260-3264A
Riggsbee, J.M.	2369-2399A	Song, H.	579-587B	Verhoeven, J.D.	2249-2255A	Zinkle, S.J.	1847-1851A
Rivkin, Z.	1065-1073B	Spanos, G.	733-740A	Villafuerte, J.C.	979-986A		1037-1051A
Robertson, I.M.	241-241A		1343-1380A	Vitek, J.M.	2009-2019A	Zok, F.	2565-2575A
	2437-2447A		1381-1390A		1753-1765A	Zong, J.H.	49-57B
	3215-3220A		1391-1411A		600-603B	Zurek, A.K.	431-439A
Roca, A.	259-268B	Speer, J.G.	817-829A		2021-2036A		
Rogers, J.R.	59-69A	Spurling, R.A.	1589-1593A	Voller, V.	749-753A		
Roh, D.W.	741-744A	Srinivasan, V.	81-86B	Voorhees, P.W.	27-37A		
Rohatgi, P.K.	2073-2082A	St. John, D.H.	743-751B				
Rollett, A.D.	3201-3213A	Stadelmann, P.	2299-2307A				
Romig, A.D., Jr.	2449-2458A	Stafford, G.R.	2669-2879A	Waber, J.T.	2037-2045A		
	2679-2685A	Stapurewicz, T.T.	967-975B	Wadley, H.N.G.	2747-2757A		
	479-484A	Stark, I.	837-844A	Wadsworth, J.	2829-2837A		
Rørvik, G.	2047-2058A	Stearn, P.H.	279-283B	Wagner, F.E.	239-249B		
Rosen, R.S.	3085-3100A	Stefanescu, D.M.	241-252A	Wai, C.M.	406-408B		
Rosenfeld, A.R.	2539-2545A		997-1005A	Wan, C.M.	2815-2817A		
Roy, G.G.	1075-1079B	Stephens, J.J.	231-239A	Wang, C.	537-541B		
Rubcumintara, T.	429-438B	Stoller, R.E.	2829-2837A	Wang, F.G.	2237-2241A		
Rubin, C.A.	1921-1931A	Stoloff, N.S.	967-976A	Wang, G.-C.	2323-2332A		
Rühle, M.	2419-2429A	Stout, M.G.	3201-3213A	Wang, G.Z.	313-320A		
Rühr, M.	1785-1789A	Strutt, P.R.	3021-3026A		321-330A		
Russ, S.M.	1595-1602A	Stubbins, J.F.	1823-1827A	Wang, J.C.	305-312A		
Russell, K.C.	1073-1082A	Sturlese, S.	1941-1949A	Wang, L.L.	567-577B		
Ryun, N.	221-230A	Subramanian, P.R.	539-545A	Wang, L.M.	1847-1851A		
	1688-1695A	Süry, M.	2489-2496A	Wang, P.-C.	1151-1159A		
		Sumino, K.	547-555A	Wang, T.-T.	2223-2236A		
		Sun, J.L.	853-858A		2265-2275A		
		Sun, Y.S.	575-588A	Wang, X.	303-312B		
Saccone, A.	2109-2114A		3187-3199A		1287-1298A		
Sachdev, A.K.	165-175A	Sundararajan, G.	1075-1079B	Was, G.S.	2097-2107A		
Sadananda, K.	177-187A	Sundararajan, T.	2759-2776A	Watanabe, K.	3165-3169A		
Sadek, A.A.	3221-3236A	Sundman, B.	303-312B	Watanabe, S.	107-115A		
Saha, R.L.	559-566B		404-406B	Watwe, A.S.	2935-2941A		
Sahajwalla, V.	71-80B		2795-2804A	Wayman, C.M.	2655-2668A		
Sai, P.S.T.	1005-1011B	Sunwoo, A.J.	1005-1011B	Weigel, J.	855-860B		
Sakakibara, T.	677-687B	Surender, G.D.	1005-1011B	Weinberg, F.	549-558B		
Sakata, K.	697-706A	Suresh, V.	1081-1084B	Weirauch, D.A., Jr.	1745-1751A		
Salinas-Rodriguez, A.	1083-1095A	Susaki, K.	121-129B	Wert, J.A.	145-151A		
	2449-2458A		129-132B	Whittenberger, J.D.	2179-2188A		
	557-565A		183-190B	Wiese, J.W.	489-497A		
Sankaran, K.	1005-1011B		753-760B	Williams, J.C.	95-105A		
Sano, N.	1081-1084B				641-651A		
	97-104B			Wittig, J.E.	2817-2821A		
	105-109B			Wittman, C.L.	707-716A		
	121-129B				3153-3164A		
Santella, M.L.	349-355B	Tabata, T.	2201-2208A	Wong, T.	2257-2263A		
Sargent, J.P.	253-255A	Tagawa, K.	5-11A	Wong, T.E.	3011-3019A		
Sarma, D.S.	1391-1411A	Taguchi, M.	529-536B	Woo, J.S.	269-277B		
Sasaki, O.	3165-3169A	Takegawa, Y.	689-695B	Woodford, D.A.	3049-3061A		
Sato, K.	5-11A	Takezawa, K.	1541-1545A	Woodward, R.L.	744-748A		
Sato, S.	1541-1545A	Tallianker, M.	2125-2129A	Worhem, D.W.	3215-3220A		
Sawtell, R.R.	421-430A		2131-2136A	Wozala, F.J.	1663-1667A		
Saxen, H.	913-923B	Tang, Z.	295-302B	Wright, E.F.	1709-1717A		
Schaffer, G.B.	2789-2794A	Taszarek, B.J.	529-538A	Wright, S.	885-897B		
Schlesinger, M.E.	447-453A	Tauqir, A.	3021-3026A	Wu, C.C.	1891-1899A		
Schulte, R.L.	2003-2007A	Taylor, K.A.	2749-2765A		567-574A		
	39-43A		1697-1708A	Wu, J.K.	3257-3258A		
	1121-1131A	Themelis, N.J.	967-975B	Wu, M.K.	257-260A		
Schultz, P.J.	111-120B	Thomas, B.G.	387-400B	Wu, R.G.	503-505A		
Scott, J.D.	629-635B	Thomas, G.	683-695A	Wu, T.	783-790B		



## Combined Subject Index

<b>A</b>	
<b>C</b>	See Alternating current
<b>Absolute viscosity</b>	See Viscosity
<b>Absorbance</b>	See Absorption (material)
<b>Absorbing</b>	See Absorption (material)
<b>Absorption (material)</b>	interaction Behavior of Nitrogen in Liquid Niobium. Determination of Hydrogen Absorption and Desorption Processes in Aluminum Melts by Continuous Hydrogen Activity Measurements.
<b>AC</b>	See Alternating current
<b>Acicular structure</b>	Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb: Applications to Fusion Welding.
<b>Acid cleaning</b>	See Pickling
<b>Acid leaching</b>	See Hydrochloric acid leaching
<b>Acid pickling</b>	See Pickling
<b>Acoustic emission</b>	Acoustic Emission During Deformation of Dual-Phase Steels. The Effects of Cathodic Charging on the Acoustic Emission Generated by Intergranular Cracking in Sensitized 304 Stainless Steel. Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.
<b>Acoustic properties</b>	See Acoustic emission
<b>Actinide metal alloys</b>	See Uranium base alloys
<b>Actinide metals</b>	See Thorium Uranium
<b>Activated carbon, Sorption</b>	<sup>197</sup> Au Mossbauer Study of the Gold Species Adsorbed on Carbon From Cyanide Solutions.
<b>Activated charcoal</b>	See Activated carbon
<b>Activity (chemical)</b>	Detailed Assessment of Partial Thermodynamic Quantities of Tin in Molten Bi—Sn Alloys From Electromotive Force Measurements. Application of the Quasi-Subregular Solution Model: the Iron—Carbon System. Viscosities and Activities in Lead-Smelting Slags. The Activity Coefficients of Oxygen in Ni—S and Co—S Melts. Interaction Coefficients in the Iron—Carbon—Titanium and Titanium—Silver Systems. Interaction Coefficients in Fe—C—Ti—I (I = Si, Cr, Al, Ni) Systems. Determination of the Association Constant of Sulfuric Acid. Determination of Hydrogen Absorption and Desorption Processes in Aluminum Melts by Continuous Hydrogen Activity Measurements. The Standard Gibbs Energy of Formation of CeF <sub>3</sub> and Its Activity Coefficient in Cryolite. Dimerization of Boron. Displacement Reactions During Mechanical Alloying.
<b>Activity (chemical), Composition effects</b>	Activity of Boron in Ni—B—C Melts Saturated With Carbon.
<b>Activity coefficients</b>	See Activity (chemical)
<b>Acurad process</b>	See Die casting
<b>Adhesion</b>	The Effects of Lead on the Electrochemical and Adhesion Behavior of Zinc Electrodeposits.
<b>Adhesivity</b>	See Adhesion
<b>Adsorption</b>	See also Chemisorption <sup>197</sup> Au Mossbauer Study of the Gold Species Adsorbed on Carbon From Cyanide Solutions. Effect of Oxygen on Vacancy Cluster Morphology in Metals.
<b>Aerospace</b>	Decomposition and Dissolution Kinetics of $\delta'$ Precipitation in Al—Li Binary Alloys. Reaction Zone Microstructure in a Ti <sub>3</sub> Al + Nb/SiC Composite. A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite. Thermal Fatigue of Ti—24Al—11Nb/SCS-6.
<b>Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy</b>	1655-1662A
<b>Some Observations on the High-Temperature Creep Behavior of 6061 Al—SiC Composites.</b>	2089-2090A
<b>Age hardening</b>	See Aging Aging (artificial) Aging (natural) Precipitation hardening
<b>Age hardening steels</b>	See Precipitation hardening steels
<b>Ageing</b>	See Aging
<b>Agents</b>	See Catalysts
<b>Aging</b>	See also Aging (artificial) Aging (natural) Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: the Clustering—Ordering Synergy. Composition Dependence of Aging Kinetics in Some Cu—Zn—Al Shape Memory Alloys. Discussion of "Spinodal Decomposition During Aging of Fe—Ni—C Martensites" and Structure of the Fe <sub>3</sub> C Carbide.
<b>Aging (artificial)</b>	The Effect of Tempering and Aging on a Low Activation Martensitic Steel. Kinetics of Retrogression in Al—Zn—Mg—(Cu) Alloys.
<b>Aging (natural)</b>	Lattice Changes of Iron—Nitrogen Martensite on Aging at Room Temperature.
<b>Agitation</b>	See also Bubbling Fluid Flow in Pachuca (Air-Agitated) Tanks. II. Mathematical Modeling of Flow in Pachuca Tanks.
<b>Air cooling</b>	Effect of Cooling Rate on Hardness of FeAl and NiAl.
<b>Aircromatic welding</b>	See Gas metal arc welding
<b>Airofoils, Coating</b>	The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.
<b>Airofoils, Heat treatment</b>	Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades.
<b>Alfvén waves</b>	See Magnetohydrodynamics
<b>Alkali metals</b>	See Lithium Potassium
<b>Alkaline earth metal alloys</b>	See Magnesium base alloys
<b>Alkaline earth metal compounds</b>	See Beryllium compounds
<b>Alkaline earth metals</b>	See Barium Calcium Magnesium
<b>Alloy cast iron</b>	See Nickel iron
<b>Alloy plating</b>	The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating. Diffusion of Sputtered Inconel 617 Coatings in Titanium.
<b>Alloy steels</b>	See also Chromium steels High alloy steels High strength steels Molybdenum steels Nickel steels Precipitation hardening steels Titanium steels Tungsten steels
<b>Alloy steels, Phase transformations</b>	An Investigation of the Generality of Incomplete Transformation to Bainite in Fe—C—X Alloys.
<b>Alloy steels, Refining</b>	Thermodynamics of Nitrogen in Ca—CaF <sub>2</sub> Slags.
<b>Alloying</b>	See also Mechanical alloying Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.
<b>Alloys</b>	See Bearing alloys Brazing alloys Casting alloys

## Alloys

Dispersion hardening alloys	205-212A
Heat resistant alloys	357-375B
Magnetic alloys	557-565A
Precipitation hardening alloys	715-722B
Shape memory alloys	733-740A
Transition metal alloys	997-1005A
<b>Alpha annealing</b>	1049-1061B
See Annealing	1063-1073B
<b>Alphatizing</b>	
See Annealing	
<b>Alternating current</b>	
Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	723-731B
<b>Alumina</b>	
See Aluminum oxide	
<b>Aluminum</b>	
See Aluminum	
<b>Aluminum, Alloying elements</b>	
Structure of Continuously Cooled Low-Carbon Vanadium Steels.	2839-2855A
<b>Aluminum, Binary systems</b>	
Phase Relationships in the Al-Ta System.	539-545A
The Structure of the High-Temperature Phase MnAl(h) and the Displacive Transformation From MnAl(h) Into Mn <sub>5</sub> Al <sub>8</sub> .	1669-1672A
<b>Aluminum, Casting</b>	
On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.	279-283B
<b>Aluminum, Composite materials</b>	
The Infiltration of Aluminum Into Silicon Carbide Composites.	475-485B
The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	1745-1751A
Infiltration of Fibrous Preforms by a Pure Metal. III. Capillary Phenomena.	2257-2263A
Corrigenda and Comments on the Infiltration of Fiber Preforms.	2267A
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	2747-2757A
<b>Aluminum, Environment</b>	
Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.	2919-2928A
<b>Aluminum, Extraction</b>	
Measurements of Magnetic Fields and Electromagnetically Driven Melt Flow in a Physical Model of a Hall-Héroult Cell.	59-69B
Thermodynamics of the System NaF-AlF <sub>3</sub> . VI. Revision. A Thermodynamic Study of the Carbothermic Reduction of Alumina in Plasma.	285-294B
Mathematical Models of Current Losses in Bipolar Cells. The Standard Gibbs Energy of Formation of CeF <sub>3</sub> and Its Activity Coefficient in Cryolite.	406-408B 783-790B
<b>Aluminum, Forming</b>	
Experimental Assessment of Structure and Property Predictions During Hot Working.	3101-3114A
<b>Aluminum, Mechanical properties</b>	
Estimation of the Yield Strength of Metals From Crystal Defect Energies.	1719-1723A
Intergranular Fracture by Slip/Grain Boundary Interaction.	2431-2436A
<b>Aluminum, Melting</b>	
Optimal Control of an Aluminum Casting Furnace. I. The Control Model.	487-494B
Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.	495-500B
<b>Aluminum, Microstructure</b>	
Development of Orientation Coherence in Plane-Strain Deformation.	2223-2236A
Characterization of the Morphological and Lattice Orientation Microstructure of As-Cast Aluminum Ingot.	2265-2275A
Dislocation Structures Ahead of Advancing Cracks.	2411-2417A
An In Situ Transmission Electron Microscope Deformation Study of the Slip Transfer Mechanisms in Metals.	2437-2447A
<b>Aluminum, Powder technology</b>	
The Physics of Mechanical Alloying: a First Report.	289-303A
<b>Aluminum, Refining</b>	
The Breakup of Bubbles Into Jets During Submerged Gas Injection.	997-1003B
<b>Aluminum, Solubility</b>	
Discussion of "Comments on the Solubility of Carbon in Molten Aluminum".	255-257A
<b>Aluminum, Sorption</b>	
Determination of Hydrogen Absorption and Desorption Processes in Aluminum Melts by Continuous Hydrogen Activity Measurements.	855-860B
<b>Aluminum, Structural hardening</b>	
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A
<b>Aluminum, Ternary systems</b>	
Discussion of "On the Free Energy of Formation of TiC and Al <sub>4</sub> C <sub>3</sub> ".	2609-2610A
<b>Aluminum, Welding</b>	
Fluid Dynamics of a Stationary Weld Pool.	45-57A
<b>Aluminum base alloys, Alloy development</b>	
Development of an Aluminum Sheet Alloy With Improved Formability.	165-175A
<b>Aluminum base alloys, Casting</b>	
Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys.	205-212A
<b>Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys".</b>	205-212A
Mathematical Modeling of Microsegregation in Binary Metallic Alloys.	357-375B
Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.	557-565A
Modeling of Feeding Behavior of Solidifying Al—7Si—0.3Mg Alloy Plate Casting.	715-722B
Solidification in the System Al—Ge—Si: the Phase Diagram, Curing Patterns, Eutectic Growth, and Modification.	733-740A
Heat Transfer—Solidification Kinetics Modeling of Solidification of Castings.	997-1005A
ALSPEN—A Mathematical Model for Thermal Stresses in Direct Chill Casting of Aluminum Billets.	1049-1061B
A Mathematical Model for Metal Flow and Heat Transfer in Centrifuge Melt Spinning.	1063-1073B
<b>Aluminum base alloys, Composite materials</b>	
The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.	231-239A
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates.	401-410A
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.	411-420A 475-485B
The Infiltration of Aluminum Into Silicon Carbide Composites. Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A
A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	1201-1207A
Crack Path Morphology in Silicon Carbide Whisker-Reinforced Aluminum Composite.	1783-1785A 2059-2072A
Infiltration of Fiber Preforms by a Binary Alloy. I. Theory. Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	2073-2082A
Some Observations on the High-Temperature Creep Behavior of 8061 Al—SiC Composites.	2089-2090A
Microscopic Examination of the Interface Region in 8061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.	2489-2496A
<b>Aluminum base alloys, Corrosion</b>	
Role of Heat Treatment and Cathodic Charging Conditions on the Hydrogen Embrittlement of HP 7075 Aluminum Alloy.	455-464A
<b>Aluminum base alloys, Crystal lattices</b>	
Lattice Imperfections Studied by X-Ray Diffraction in Deformed Aluminum-Base Alloys: Al—Ge Alloy.	2597-2598A
<b>Aluminum base alloys, Diffusion</b>	
Hydrogen Diffusion in Al—Li Alloys.	649-655B
<b>Aluminum base alloys, Forming</b>	
Calculations of Forming Limit Diagrams.	87-94A
<b>Aluminum base alloys, Heat treatment</b>	
Lithium Diffusion in Aluminum—Lithium Alloy 2090 Clad With 7072.	39-43A
Dissolution and Melting of Secondary Al <sub>2</sub> Cu Phase Particles in an Al/Cu Alloy.	1689-1695A
Kinetics of Retraction in Al—Zn—Mg—(Cu) Alloys.	2277-2280A
<b>Aluminum base alloys, Mechanical properties</b>	
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.	69-80A
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. II. Crack Opening Profile.	81-86A
Mechanical Properties and Microstructures of Al—Mg—Sc Alloys.	421-430A
Fatigue Crack Propagation in a Rapidly Solidified Al—12.4Fe—1.2V—2.3Si Alloy.	499-500A
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
Effect of Cerium Content on the Deformation Behavior of Rapidly Solidified Al—Fe—Ce Alloys.	2155-2158A
The Nature of the Two Opening Levels Following an Overload in Fatigue Crack Growth.	2717-2727A
New Aspects on the Superplasticity of Fine-Grained 7475 Aluminum Alloys.	2729-2737A
<b>Aluminum base alloys, Metal working</b>	
Annealing Response of 3000 and 5000 Series Aluminum Alloys.	2643-2654A
<b>Aluminum base alloys, Microstructure</b>	
The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A
Phase Formation in Electrodeposited and Thermally Annealed Al—Mn Alloys.	2869-2879A
<b>Aluminum base alloys, Nondestructive testing</b>	
The Acoustoelastic Response of a Textured Material During Elastic—Plastic Deformation.	3011-3019A
<b>Aluminum base alloys, Powder technology</b>	
Extended Al(Mn) Solution in a Rapidly Solidified Al—Li—Mn—Zr Alloy.	1785-1789A
<b>Aluminum base alloys, Structural hardening</b>	
Decomposition and Dissolution Kinetics of $\delta$ Precipitation in Al—Li Binary Alloys.	1133-1141A
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A
<b>Aluminum base alloys, Welding</b>	
Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.	2795-2804A
<b>Aluminum bronzes, Forming</b>	
An Experimental Investigation of the Superplastic Forming Behavior of a Commercial Aluminum-Bronze.	2957-2966A
<b>Aluminum compounds</b>	
See also Aluminum oxide	

Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped $Ni_{76}Al_{19}Ti_5$ Single Crystals.	107-115A	Angles (geometry) See Contact angle	
<b>Aluminum compounds, Atomic properties</b>	1655-1662A	<b>Anisotropy</b>	
Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy.		See also Elastic anisotropy Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.	
<b>Aluminum compounds, Composite materials</b>	213-219A	Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to $l = 12$ and Their Use for the On-Line Prediction of $r$ -Value.	
Interaction of $Al_2O_3-ZrO_2$ Fibers With a Ti—Al Matrix During Pressure Casting.	441-446A	A General Method for Estimation of Fracture Surface Roughness. I. Theoretical Aspects.	
Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	1559-1569A	A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	
Reaction Zone Microstructure in a $Ti_3Al + Nb/SiC$ Composite.			
Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.	1589-1593A		
Thermal Fatigue of Ti—24Al—11Nb/SCS-6.	1595-1602A		
High-Temperature Slow-Strain-Rate Compression Studies on $CoAl-Ti_2B$ Composites.	2179-2188A	Positon Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing.	
Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.	2701-2707A	The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	
Microstructure of a Pressure-Cast $Fe_3Al$ Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.	2881-2889A	The Effect of Fatigue Deformation on Microstructural Evolution in a Superplastic Aluminum—Zinc Eutectoid Alloy.	
<b>Aluminum compounds, Crystal lattices</b>	279-288A	Creep Behavior of Nickel—Copper Laminate Composites With Controlled Composition Gradients.	
Preferred Orientations in Extruded Nickel and Iron Aluminides.	2339-2354A	Annealing Response of 3000 and 5000 Series Aluminum Alloys.	
<b>Aluminum compounds, Diffusion</b>	2359-2364A	Phase Formation in Electrodeposited and Thermally Annealed Al—Mn Alloys.	
On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	1799-1808A	Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon ( $\sim 0.20$ wt.%) Steels.	
<b>Aluminum compounds, Irradiation</b>			
Amorphization in $Zr_2Al$ Irradiated With 1 MeV $e^-$ and $Kr^+$ .			
<b>Aluminum compounds, Mechanical properties</b>	135-143A	<b>Anodes, Refining</b>	
The Flow and Fracture of a $Ti_3Al-Nb$ Alloy.	145-151A	A Mineralogical Overview of the Behavior of Nickel During Copper Electrorefining.	
Microstructure, Deformation, and Fracture Characteristics of an $Al_{17}Pd_3Ti_{25}$ Intermetallic Alloy.	2281-2282A	229-238B	
Effect of Cooling Rate on Hardness of FeAl and NiAl.	2431-2436A	<b>Anodic dissolution</b>	
Intergranular Fracture by Slip/Grain Boundary Interaction.	2521-2530A	The Acceleration Mechanism of Stress on Anodic Dissolution of Bare Metal Surface.	
Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2687-2699A	3260-3264A	
Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy.	2709-2715A	<b>Antifriction alloys</b>	
Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2967-2976A	See Bearing alloys Tin base alloys	
Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a NiAl-Based Alloy.	3027-3028A	<b>Antimony, Impurities</b>	
Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallic.	3063-3074A	Removal of Antimony From Copper by Injection of Soda Ash. Effect of Impurity Content on Creep Crack Growth Resistance in $1Cr1Mo0.25V$ Ferritic Steels.	
Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	959-970A	967-975B 1941-1949A	
<b>Aluminum compounds, Microstructure</b>	567-577B	<b>Antimony compounds, Mechanical properties</b>	
Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.	1273-1286A	Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	
<b>Aluminum compounds, Powder technology</b>		2709-2715A	
The Combustion Synthesis of Copper Aluminides.		<b>Arc plasma welding</b>	
<b>Aluminum compounds, Welding</b>	697-706A	See Plasma arc welding	
Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb. Applications to Fusion Welding.		<b>Arc welding</b>	
<b>Aluminum killed steels, Forming</b>	87-94A	See also Submerged arc welding Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. I. Fracture Behavior.	
Calculations of Forming Limit Diagrams.		313-320A	
<b>Aluminum killed steels, Metal working</b>		Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. II. Micromechanism of Fracture.	
Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to $l = 12$ and Their Use for the On-Line Prediction of $r$ -Value.		321-330A	
<b>Aluminum killed steels, Rolling</b>	331-343A	<b>Arc welds</b>	
Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.		See Welded joints	
<b>Aluminum oxide</b>		<b>Argon arc welding</b>	
See also Sapphire		See Gas tungsten arc welding	
<b>Aluminum oxide, Composite materials</b>	213-219A	<b>Arsenides</b>	
Interaction of $Al_2O_3-ZrO_2$ Fibers With a Ti—Al Matrix During Pressure Casting.	1201-1207A	See Gallium arsenide	
A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	2059-2072A	<b>Artificial aging</b>	
Infiltration of Fiber Preforms by a Binary Alloy. I. Theory.	2257-2263A	See Aging (artificial)	
Infiltration of Fibrous Preforms by a Pure Metal. III. Capillary Phenomena.	2829-2837A	<b>Astroceram</b>	
High-Temperature Interactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.	2881-2889A	See Ceramics	
Microstructure of a Pressure-Cast $Fe_3Al$ Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.		<b>Atomic diffusion</b>	
<b>Aluminum oxide, Mechanical properties</b>	2419-2429A	See Diffusion	
The Fracture Energy of Bimaterial Interfaces.		<b>Atomic properties</b>	
<b>Amorphous structure, Heating effects</b>	2869-2879A	See Atomic structure	
Phase Formation in Electrodeposited and Thermally Annealed Al—Mn Alloys.		<b>Atomic reactors</b>	
<b>Amorphous structure, Radiation effects</b>	1799-1808A	See Nuclear reactors	
Amorphization in $Zr_2Al$ Irradiated With 1 MeV $e^-$ and $Kr^+$ . Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.	1809-1815A	<b>Atomic structure</b>	
<b>Analyzing</b>		Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy.	
See Failure analysis Mathematical analysis Stress analysis		Atomic Structure and Energy of $\Sigma = 5$ Tilt Boundaries in Gold.	
<b>Andrade method</b>		1655-1662A 2299-2307A	
See Crystal growth		<b>Atomization</b>	
		See Atomizing	
		Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays.	
		Extended Al(Mn) Solution in a Rapidly Solidified Al—Li—Mn—Zr Alloy.	899-912B 1785-1789A
		<b>Attenuation</b>	
		See Ultrasonic attenuation	
		<b>Auger electron spectroscopy</b>	
		High-Resolution Auger Electron Spectroscopy of Grain Boundary Phosphorus Segregation in NiCrMo and NiCr Steels.	2817-2821A

## Austempering

<b>Austempering</b>	
Mechanism of Bainitic Transformation in Compacted Graphite Cast Irons.	895-899A
Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon ( $\sim 0.20$ wt.%) Steels.	3153-3164A
<b>Austenite</b>	
See also Retained austenite	
Orientation Relationships Among $Mg_2C_6$ , $M_2C$ , and Austenite in an Fe—Mn—Al—Mo—C Alloy.	567-574A
<b>Austenitic stainless steels, Casting</b>	
Finite Difference Heat-Transfer Modeling for Continuous Casting.	761-770B
<b>Austenitic stainless steels, Corrosion</b>	
Phase Transitions in Rapidly Solidified Stainless Steels Cathodically Hydrogen Charged.	1251-1259A
The Effects of Cathodic Charging on the Acoustic Emission Generated by Intergranular Cracking in Sensitized 304 Stainless Steel.	1933-1939A
Fatigue Threshold and Low-Rate Crack Propagation Properties for Structural Steels in 3% Sodium Chloride Aqueous Solution.	2189-2199A
The Acceleration Mechanism of Stress on Anodic Dissolution of Bare Metal Surface.	3260-3264A
<b>Austenitic stainless steels, Forging</b>	
Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.	1969-1987A
<b>Austenitic stainless steels, Forming</b>	
Calculations of Forming Limit Diagrams.	87-94A
<b>Austenitic stainless steels, Irradiation</b>	
Unified Theoretical Analysis of Experimental Swelling Data for Irradiated Austenitic and Ferritic/Martensitic Alloys.	1021-1035A
Radiation Effects on Time-Dependent Deformation: Creep and Growth.	1053-1063A
Modeling Dislocation Evolution in Irradiated Alloys.	1829-1837A
The Effect of Oxygen on Void Stability in Ion-Irradiated Steel.	1839-1846A
<b>Austenitic stainless steels, Mechanical properties</b>	
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A
Creep Crack Growth of HK40 Steel: Microstructural Effects.	2237-2241A
Effect of Boron on High-Temperature Creep Behavior of Austenitic Stainless Steel DIN 1.4970.	3033-3038A
Influence of Deformation-Induced Martensite on Fatigue Crack Propagation in 304-Type Steels.	3137-3152A
The Erosion Behavior of 304 Stainless Steel at Elevated Temperatures.	3187-3199A
<b>Austenitic stainless steels, Microstructure</b>	
An In Situ Transmission Electron Microscope Deformation Study of the Slip Transfer Mechanisms in Metals.	2437-2447A
<b>Austenitic stainless steels, Welding</b>	
Modeling of Interfacial Phenomena in Welding.	600-603B
Grain Structures in Gas Tungsten-Arc Welds of Austenitic Stainless Steels With Ferrite Primary Phase.	979-986A
Microstructure of Stainless Steel Single-Crystal Electron Beam Welds.	1753-1766A
Analysis of Solidification Microstructures in Fe—Ni—Cr Single-Crystal Welds.	1767-1782A
Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.	2585-2596A
Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.	3085-3100A
<b>Austenitizing</b>	
Mechanism of Bainitic Transformation in Compacted Graphite Cast Irons.	895-899A
<b>Auto oxidation</b>	
See Oxidation	
<b>Autodiffusion</b>	
See Diffusion	
<b>Autogenous smelting</b>	
See Flash smelting	
<b>Automobile components</b>	
See Automotive components	
<b>Automotive bodies, Materials selection</b>	
Development of an Aluminum Sheet Alloy With Improved Formability.	165-175A
<b>Automotive components</b>	
See also Automotive bodies	
<b>Automotive components, Design</b>	
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
<b>A15 compounds, Irradiation</b>	
Radiation Effects in High-Temperature Superconductors: a Brief Review.	1015-1019A
<b>Babbitt</b>	
See Bearing alloys	
<b>Bainite</b>	
Bainite in Steels.	767-797A
Simple Geometry and Crystallography Applied to Ferrous Bainites.	799-803A
On Bainite Formation.	811-816A
A Perspective on the Morphology of Bainite.	817-829A
The Analysis of Bainite Plates in Cu—Zn and Cr—Ni.	831-835A
The Distribution of Substitutional Alloying Elements During the Bainite Transformation.	837-844A
Transformation of Lower Bainite in Hypereutectoid Steels.	845-851A
High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation.	853-858A
<b>The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.</b>	859-875A
Morphology and Properties of Low-Carbon Bainite.	877-888A
Mechanism of Bainitic Transformation in Compacted Graphite Cast Irons.	895-899A
Bainite Viewed Three Different Ways.	1343-1380A
A Mechanism for the Formation of Lower Bainite.	1381-1390A
Influence of Carbon Concentration and Reaction Temperature Upon Bainite Morphology in Fe—C—2Mn Alloys.	1391-1411A
Growth and Overall Transformation Kinetics Above the Bay Temperature in Fe—C—Mo Alloys.	1413-1432A
The Incomplete Transformation Phenomenon in Fe—C—Mo Alloys.	1433-1463A
An Investigation of the Generality of Incomplete Transformation to Bainite in Fe—C—X Alloys.	1479-1491A
The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe—C—Ti Alloys.	1509-1515A
The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe—C—Si—Mn Alloys.	1517-1525A
Structure—Property Relationships in Bainitic Steels.	1527-1540A
Nucleation and Growth of Bainite Crystals in Cu—Zn—Al Alloys.	1541-1545A
Analysis of the Composition of $\alpha$ Plates Isothermally Formed in Titanium Binary Alloys.	1547-1556A
Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferrite Steel.	2021-2036A
The Fatigue Life of a Complex Microstructure With Bainite in a High Carbon Cr—Si Tool Steel.	2282-2286A
Correction to "International Conference on Bainite (Part I), Foreword".	2288A
Ledges and Carbides in Lower Bainite in a Hypereutectoid Steel.	2637-2641A
<b>Ball milling</b>	
The Physics of Mechanical Alloying: a First Report.	289-303A
Nanocrystalline Metals Prepared by High-Energy Ball Milling.	2333-2337A
Displacement Reactions During Mechanical Alloying.	2789-2794A
<b>Barium, Extraction</b>	
Gibbs Energies of Formation of Intermetallic Phases in the Systems Pt—Mg, Pt—Ca, and Pt—Ba and Some Applications.	521-527B
<b>Basic oxygen processes</b>	
See Oxygen steel making	
<b>Basic oxygen steel making</b>	
See Oxygen steel making	
<b>Batch type furnaces</b>	
See Converters	
<b>Bauschinger effect</b>	
Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.	717-724A
Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on Bauschinger Effect and Residual Phase Stresses.	725-732A
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A
<b>Beams (radiation)</b>	
See Electron beams	
<b>Beams (structural)</b>	
See Cantilever beams	
<b>Bearing alloys</b>	
See also Bearing steels	
<b>Bearing alloys, Composite materials</b>	
Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.	529-538A
<b>Bearing steels, Mechanical properties</b>	
Rolling Contact Fatigue and Fatigue Crack Propagation in 1C—1.5Cr Bearing Steel in the Bainite Condition.	889-893A
Rolling Contact Deformation, Etching Effects, and Failure of High-Strength Bearing Steel.	1921-1931A
<b>Bearing steels, Structural hardening</b>	
The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels.	653-665A
<b>Beds</b>	
See Fluidized beds	
<b>Beehive kilns</b>	
See Kilns	
<b>Bend properties</b>	
See Bend strength	
<b>Bend strength</b>	
Mechanical Properties of Ti—Cr—Nb Alloys and Prospects for High-Temperature Applications.	2149-2154A
<b>Bendability</b>	
See Formability	
<b>Bending strength</b>	
See Bend strength	
<b>Beryllium compounds, Mechanical properties</b>	
Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A
Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2709-2715A
<b>Bi-polar cells, Design</b>	
Mathematical Models of Current Losses in Bipolar Cells.	783-790B

<b>Bibliographies</b>	
Applications of Solid Electrolytes in Thermodynamic Studies of Materials: a Review.	1223-1250A
<b>Bicrystals, Corrosion</b>	
Stress Corrosion Cracking of Copper Bicrystals With (110)-Tilt $\Delta$ 3, $\Delta$ 9, and $\Delta$ 11 Coincident Site Lattice Boundaries.	2355-2361A
<b>Bicrystals, Diffusion</b>	
Bicrystal Studies of Diffusion-Induced Grain Boundary Migration in Cu/Zn.	2363-2367A
<b>Billet casting</b>	
ALSOPEN—a Mathematical Model for Thermal Stresses in Direct Chill Casting of Aluminum Billets.	1049-1061B
<b>Bimetals, Mechanical properties</b>	
Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.	529-538A
Fracture Behavior of Laminated Metal—Metallic Glass Composites.	2159-2168A
<b>Binary systems, Electrochemistry</b>	
Detailed Assessment of Partial Thermodynamic Quantities of Tin in Molten Bi—Sn Alloys From Electromotive Force Measurements.	87-96B
<b>Binary systems, Phases (state of matter)</b>	
An Assessment of the CaO—SiO <sub>2</sub> System.	303-312B
Application of the Quasi-Subregular Solution Model: the Iron—Carbon System.	447-453A
Phase Relationships in the Al—Ta System.	539-545A
Thermodynamic Study and the Phase Diagram of the Mg—Sn System.	707-714B
The Structure of the High-Temperature Phase MnAl(h) and the Displacive Transformation From MnAl(h) Into Mn <sub>3</sub> Al.	1669-1672A
Phase Relationships in the Neodymium—Magnesium Alloy System.	2109-2114A
<b>Bismuth, Binary systems</b>	
Detailed Assessment of Partial Thermodynamic Quantities of Tin in Molten Bi—Sn Alloys From Electromotive Force Measurements.	87-96B
<b>Bismuth, Solubility</b>	
Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys.	59-68A
<b>Blast furnace components</b>	
See Tuyeres	
<b>Blast furnace practice</b>	
Characterization of Bonding and Crystalline Phases in Fluxed Pellets Using Peat Moss and Bentonite as Binders.	463-474B
Blast Furnace On-Line Simulation Model.	913-923B
<b>Blast furnace refractories</b>	
See Refractories	
<b>Blast furnace slags</b>	
Viscosities and Activities in Lead-Smelting Slags.	501-510B
<b>Blast furnace slags, Recovering</b>	
Distribution of Niobium or Tantalum Between Fluorine-Containing Slag and Iron in Blast Furnace Smelting.	873-878B
The Reduction of Zinc From Slags by an Iron—Carbon Melt.	885-897B
<b>Blast furnaces</b>	
Study of Moisture Transfer During the Strand Sintering Process.	37-47B
The Activity Coefficients of Oxygen in Ni—S and Co—S Melt.	529-536B
<b>Bohr model</b>	
See Atomic structure	
<b>Bomb reduction</b>	
See Reduction (chemical)	
<b>Bombardment (irradiation)</b>	
See Irradiation	
<b>Bombs (pressure vessels)</b>	
See Pressure vessels	
<b>Bonding strength</b>	
Influences of Matrix Ductility, Interfacial Bonding Strength, and Fiber Volume Fraction on Tensile Strength of Unidirectional Metal Matrix Composite.	971-977A
The Fracture Energy of Bimaterial Interfaces.	2419-2429A
<b>Borides, Composite materials</b>	
Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	441-446A
High-Temperature Slow-Strain-Rate Compression Studies on CoAl—TiB <sub>2</sub> Composites.	2179-2188A
<b>Boron, Alloying elements</b>	
The Boron Hardenability Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels.	1697-1708A
Effect of Boron on the Microstructure and Tensile Properties of Dual-Phase Steel.	2547-2553A
Effect of Boron on High-Temperature Creep Behavior of Austenitic Stainless Steel DIN 1.4970.	3033-3038A
<b>Boron, Composite materials</b>	
Effects of Interfacial Strength on Fatigue Crack Growth in a Fiber-Reinforced Titanium-Alloy Composite.	1603-1612A
<b>Boron, Dopeants</b>	
Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped Ni <sub>76</sub> Al <sub>19</sub> Ti <sub>5</sub> Single Crystals.	107-115A
<b>Boron, Reactions (chemical)</b>	
Dimerization of Boron.	2609A
<b>Boron compounds</b>	
See Borides	
<b>BOS process</b>	
See Oxygen steel making	
<b>Boundaries</b>	
See Grain boundaries	
Phase boundary	
<b>Boundary lubrication</b>	
See Lubrication	
<b>Brasses, Composite materials</b>	
Fracture Behavior of Laminated Metal—Metallic Glass Composites.	2159-2168A
<b>Brasses, Forming</b>	
Calculations of Forming Limit Diagrams.	87-94A
<b>Brasses, Mechanical properties</b>	
Dislocation Structures in the Strain Localized Region in Fatigued 70/30 Brass and the Interaction With Grain Boundary.	667-671A
<b>Brasses, Microstructure</b>	
Stress Gradients and Extent of Slip in Alpha Brass.	3075-3084A
<b>Brasses, Structural hardening</b>	
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A
<b>Brazing alloys, Physical properties</b>	
Thermodynamics of Titanium in Ag—Cu Alloys.	349-355B
<b>Breeder reactors</b>	
Swelling Behavior of U—Pu—Zr Fuel.	517-528A
Experimental Studies of U—Pu—Zr Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II.	1863-1870A
<b>Brick kilns</b>	
See Kilns	
<b>Bridgman method</b>	
See Crystal growth	
<b>Brine</b>	
See Salt water	
<b>Brittle fracture</b>	
High Strain-Rate-Induced Cleavage Fracture in Mild Carbon Steel.	431-439A
<b>Bronzes</b>	
See also Aluminum bronzes	
<b>Bronzes, Composite materials</b>	
Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.	529-538A
<b>Bubbles</b>	
The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire.	919-923A
A Mechanism for Hydrogen-Induced Intergranular Stress Corrosion Cracking in Alloy 600.	1261-1271A
<b>Bubbles, Radiation effects</b>	
Effects of Preinjected Helium in Heavy-Ion Irradiated Nickel and Nickel—Copper Alloys.	1847-1851A
<b>Bubbling</b>	
The Spout of Air Jets Upwardly Injected into a Water Bath.	71-80B
The Breakup of Bubbles Into Jets During Submerged Gas Injection.	997-1003B
Applicability of Potential Flow Assumption for Bubbles in Copper-Making Condition.	1075-1079B
<b>Bulge forming</b>	
See Bulging	
<b>Bulging</b>	
An Experimental Investigation of the Superplastic Forming Behavior of a Commercial Aluminum-Bronze.	2957-2968A
<b>Burdening</b>	
See Blast furnace practice	
<b>Burn up</b>	
See Fuel consumption	
<b>Burning</b>	
See Combustion	
<b>Burnout</b>	
See Fuel consumption	
<b>BV process</b>	
See Degassing	
<b>Cage zone melting</b>	
See Zone melting	
<b>Cage zone refining</b>	
See Zone melting	
<b>Cakes (metal)</b>	
See Ingots	
<b>Calcinining</b>	
See Roasting	
<b>Calcium, Alloying elements</b>	
Fracture Toughness of Calcium-Modified Ultrahigh-Strength 4340 Steel.	2739-2746A
<b>Calcium, Extraction</b>	
Gibbs Energies of Formation of Intermetallic Phases in the Systems Pt—Mg, Pt—Ca, and Pt—Ba and Some Applications.	521-527B
<b>Calcium, Ternary systems</b>	
An Assessment of the Ca—Fe—O System.	2759-2776A
<b>Calcium compounds</b>	
See Lime	

**Calcium oxide****Calcium oxide**  
See Lime**Calculating**  
See ComputationComputer programs  
Mathematical analysis  
Numerical analysis**Calculation**

See Computation

Computer programs  
Mathematical analysis  
Numerical analysis**Canalicular beams, Corrosion**

The Effects of Cathodic Charging on the Acoustic Emission Generated by Intergranular Cracking in Sensitized 304 Stainless Steel.

1933-1939A

**Carbides**

See also Silicon carbide

High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation.

Correction to "Carbide Precipitation During Stage I Tempering of Fe—Ni—Cr Martensites".

853-858A

2749-2765A

**Carbides, Composite materials**

Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.

441-446A

**Carbon**

See also Activated carbon

Graphite

**Carbon, Binary systems**

Application of the Quasi-Subsubregular Solution Model: the Iron—Carbon System.

447-453A

**Carbon, Diffusion**

Atomic Mass Transport of Carbon in Two-Phase Nb—1.02r—0.1C Alloy Under a Temperature Gradient.

2929-2934A

**Carbon, Reactions (chemical)**

Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.

313-320B

**Carbon, Solubility**

Discussion of "Comments on the Solubility of Carbon in Molten Aluminum".

255-257A

**Carbon, Ternary systems**

A Thermodynamic Assessment of the Fe—Mn—C System.

Discussion of "On the Free Energy of Formation of TiC and  $Al_2C_3$ ".

2609-2610A

Thermodynamic Evaluation of the Cr—Ni—C System.

2777-2787A

**Carbon compounds**

See Carbides

**Carbon manganese steels, Phase transformations**

The Distribution of Substitutional Alloying Elements During the Bainite Transformation.

837-844A

The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe—C—Si—Mn Alloys.

1517-1525A

**Carbon steels**

See also Carbon manganese steels

High carbon steels

Low carbon steels

Medium carbon steels

Rimming steels

**Carbon steels, Corrosion**

Hydrogen-Assisted Ductile Fracture in Spheroidized 1520 Steel. I. Axisymmetric Tension.

465-477A

**Carbon steels, Heat treatment**

Tempering of Steel During Laser Treatment.

987-995A

**Carbon steels, Mechanical properties**

A Study of Void Nucleation, Growth, and Coalescence in Spheroidized 1518 Steel.

Acoustic Emission During Deformation of Dual-Phase Steels. High Strain-Rate-Induced Cleavage Fracture in Mild Carbon Steel.

Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.

Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on the Bauschinger Effect and Residual Phase Stresses.

Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.

Microscopic Observations of Adiabatic Shear Bands in Three Different Steels.

Through-Thickness Fracture of a Ti—V—N Plate Steel.

117-134A

373-379A

431-439A

**Carbon steels, Microstructure**

A Mechanism for the Formation of Lower Bainite.

Influence of Carbon Concentration and Reaction Temperature Upon Bainite Morphology in Fe—C—2Mn Alloys.

1381-1390A

1391-1411A

**Carbon steels, Phase transformations**

Coupled Diffusional/Displacive Transformations. II. Solute Trapping.

Transformation of Lower Bainite in Hypereutectoid Steels.

805-809A

845-851A

**Carbon steels, Structural hardening**

The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels.

653-665A

**Carbon steels, Welding**

Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. I. Fracture Behavior.

Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. II. Micromechanism of Fracture.

313-320A

321-330A

**Carbonitriding**Phase Transformations and Stress Relaxation in  $\gamma'$ - $Fe_3Ni_{1-x}$  Surface Layers During Oxidation.

901-912A

**Carbonyl powders, Mechanical properties**

Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.

2531-2538A

**Carbothermic reactions**

A Thermodynamic Study of the Carbothermic Reduction of Alumina in Plasma.

406-408B

**Case hardening**

See Carburizing

Nitriding

**Cast iron**

See Compacted graphite iron

Gray iron

**Casting**

See also Billet casting

Centrifugal casting

Chill casting

Continuous casting

Melt spinning

Pressure casting

Rheocasting

Slab casting

Spray casting

Squeeze casting

Optimal Control of an Aluminum Casting Furnace. I. The Control Model.

487-494B

Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.

495-500B

**Casting alloys, Microstructure**

Microstructure and Its Development in Cu—Al—Ni Alloys.

575-588A

**Casting defects**

Modeling of Feeding Behavior of Solidifying Al—7Si—0.3Mg Alloy Plate Casting.

715-722B

**Castings**

See Ingots

**Catalysis**

Equilibria Between Ferrous and Ferric Chlorides in Molten Chloride Salts.

131-133B

**Catalysts, Synthesis**

Study of Chloridizing Volatilization Roasting of Cinnabar as a Basis for a Process to Obtain Mercuric and Mercurous Chlorides.

259-268B

**Catalytic converters**

See Automotive components

**Cathodes, Materials selection**

Consumable Cathode Selection in the Production of Neodymium—Iron Alloys via Molten Salt Electrolysis.

599-600B

**Caustic lime**

See Lime

**Cavitation**

Ultrasonic Velocity Change With Creep Damage in Copper.

1725-1732A

Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.

2585-2596A

An Experimental Investigation of the Superplastic Forming Behavior of a Commercial Aluminum-Bronze.

2957-2966A

**Cavitation, Impurity effects**

Effect of Impurity Content on Cavitation in the Superplastic Zn—22Al Alloy.

2605-2608A

**Cavitation, Radiation effects**

Experimental Studies of U—Pu—Zr Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II.

1863-1870A

**CCT curves**

See TTT curves

**Cellular precipitates**

The Development of Solidification Microstructures in the Presence of Lateral Constraints.

1299-1310A

**Centrifugal casting**

A Mathematical Model for Metal Flow and Heat Transfer in Centrifuge Melt Spinning.

1063-1073B

**Ceramic mold casting**

See Investment casting

**Ceramics**

See also Aluminum oxide

Silicon carbide

Silicon dioxide

Titanium carbide

**Ceramics, Brazing**

Thermodynamics of Titanium in Ag—Cu Alloys.

349-355B

**Cerium, Alloying elements**

Effect of Cerium Content on the Deformation Behavior of Rapidly Solidified Al—Fe—Ce Alloys.

2155-2158A

**Cerium, Reactions (chemical)**

Equilibria Between Cerium or Neodymium and Oxygen in Molten Iron.

295-302B

## Cobalt compounds

The Standard Gibbs Energy of Formation of $\text{CeF}_3$ and Its Activity Coefficient in Cryolite.		
<b>Chalcocite</b>		
Mathematical Modeling of Sulfide Flash Smelting Process. I. Model Development and Verification with Laboratory and Pilot Plant Measurements for Chalcocite Concentrate Smelting.	861-865B	Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels. 2555-2563A
Mathematical Modeling of Sulfide Flash Smelting Process. II. Quantitative Analysis of Radiative Heat Transfer.	945-958B	Chromium molybdenum vanadium steels, Mechanical properties
<b>Chapmanizing</b>	959-966B	Effect of Impurity Content on Creep Crack Growth Resistance in $1\text{Cr}1\text{Mo}0.25\text{V}$ Ferritic Steels. 1941-1949A
See Nitriding		Chromium molybdenum vanadium steels, Metallography
<b>Charpy impact tests</b>		High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation. 853-858A
See Impact tests		Chromium molybdenum vanadium steels, Welding
<b>Charing</b>		Microstructure of Welded and Weld-Simulated $3\text{Cr}-1.5\text{Mo}-0.1\text{V}$ Ferritic Steel. 2021-2036A
See Combustion		Chromium nickel molybdenum steels
<b>Chemical analysis</b>		See Nickel chromium molybdenum steels
See Quantitative analysis		Chromium nickel steels
Surface analysis (chemical)		See Nickel chromium steels
<b>Chemical composition</b>		Chromium steels
The Analysis of Bainite Plates in $\text{Cu}-\text{Zn}$ and $\text{Cr}-\text{Ni}$ .	831-835A	See also Chromium molybdenum steels
<b>Chemical compounds</b>		Nickel chromium steels
See Cryolite		Chromium steels, Heat treatment
<b>Chemical finishing</b>		Tempering of Steel During Laser Treatment. 987-995A
See Etching		Chromium steels, Mechanical properties
<b>Chemical kinetics</b>		The Fatigue Life of a Complex Microstructure With Bainite in a High Carbon $\text{Cr}-\text{Si}$ Tool Steel. 2282-2288A
See Reaction kinetics		Effects of Temper Level on the Dependence of Fatigue Crack Growth Threshold and Crack Closure on the Prior Austenitic Grain Size. 3171-3186A
<b>Chemical processes</b>		Chromium steels, Metal working
See Reactions (chemical)		Improvement in Toughness of $\text{Fe}-\text{Cr}-\text{Mn}-\text{C}$ Steels by Thermal-Mechanical Treatments. 683-695A
<b>Chemical properties</b>		Chromium steels, Microstructure
See Activity (chemical)		Ledges and Carbides in Lower Bainite in a Hypereutectoid Steel. 2637-2641A
<b>Chemical reactions</b>		Chromium steels, Phase transformations
See Reactions (chemical)		Overall Reaction Kinetics and Morphology of Austenite Decomposition Between the Upper Nose and the $M_1$ of a Hypoeutectoid $\text{Fe}-\text{C}-\text{Cr}$ Alloy. 1465-1478A
<b>Chemical reduction</b>		Chromium vanadium steels
See Reduction (chemical)		See Chromium molybdenum vanadium steels
<b>Chemisorption</b>		Claddings, Diffusion
Effect of Oxygen on Vacancy Cluster Morphology in Metals.	1037-1051A	Lithium Diffusion in Aluminum—Lithium Alloy 2090 Clad With 7072. 39-43A
<b>Chemistry</b>		Cleavage
See also Physical chemistry		Microstructure, Deformation, and Fracture Characteristics of an $\text{Al}_{17}\text{Pd}_{12}\text{Ti}_{25}$ Intermetallic Alloy. 145-151A
<b>Thermochimistry</b>		High Stress-Rate-Induced Cleavage Fracture in Mild Carbon Steel. 431-439A
Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690.	2097-2107A	Through-Thickness Stress Intensity on Fracture Mode Transitions for Hydrogen-Assisted Cracking in AISI 4340 Steel. 1177-1191A
On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A	Close packed hexagon
<b>Chill casting</b>		See Hexagonal lattice
See also Direct chill casting		Clustering, Deformation effects
On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.	279-283B	Development of Orientation Coherence in Plane-Strain Deformation. 2223-2236A
<b>Chilling</b>		Clustering, Heating effects
See Cooling		Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: the Clustering—Ordering Synergy. 589-602A
<b>Chlorides, Synthesis</b>		Coalescence
Study of Chloridizing Volatilization Roasting of Cinnabar as a Basis for a Process to Obtain Mercuric and Mercurous Chlorides.	259-268B	See Coalescing
<b>Chloridizing</b>		Coalescing
Study of Chloridizing Volatilization Roasting of Cinnabar as a Basis for a Process to Obtain Mercuric and Mercurous Chlorides.	259-268B	A Study of Void Nucleation, Growth, and Coalescence in Spheroidized 1518 Steel. 117-134A
<b>Chlorination</b>		Coalescing, Field effects
Equilibrium Between Ferrous and Ferric Chlorides in Molten Chloride Salts.	131-133B	Modeling of Collision and Coalescence of Droplets During Microgravity Processing of $\text{Zn}-\text{Bi}$ Immiscible Alloys. 59-68A
The Selective Chlorination of Iron From Ilmenite Ore by $\text{CO}-\text{Cl}_2$ Mixtures. I. Intrinsic Kinetics.	321-330B	Coating
The Selective Chlorination of Iron From Ilmenite Ore by $\text{CO}-\text{Cl}_2$ Mixtures. II. Mathematical Modeling of the Fluidized-Bed Process.	331-340B	See Spray coating
The Selective Carbochlorination of Iron From Titaniferous Magnetite Ore in a Fluidized Bed.	341-347B	Coatings
<b>Chlorine compounds</b>		See Electrocoatings
See Chlorides		Protective coatings
<b>Chromium, Corrosion</b>		Sprayed coatings
Corrosion of $\text{Mo}, \text{Nb}, \text{Cr}$ and $\text{Y}$ in Molten Aluminum.	2919-2928A	Cobalt, Diffusion
<b>Chromium, Powder technology</b>		A Study of the Thermotransport Behavior of Cobalt in Thorium. 2141-2148A
Nanocrystalline Metals Prepared by High-Energy Ball Milling.	2333-2337A	Cobalt, Extraction
<b>Chromium, Ternary systems</b>		The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.
A Reassessment of the $\text{Cr}-\text{Fe}-\text{Ni}$ System.	1673-1680A	The Activity Coefficients of Oxygen in $\text{Ni}-\text{S}$ and $\text{Co}-\text{S}$ Melts.
A Thermodynamic Evaluation of the $\text{Cr}-\text{Fe}-\text{N}$ System.	2477-2488A	Cobalt, Powder technology
Thermodynamic Evaluation of the $\text{Cr}-\text{Ni}-\text{C}$ System.	2777-2787A	Nanocrystalline Metals Prepared by High-Energy Ball Milling. 2333-2337A
<b>Chromium base alloys, Mechanical properties</b>		Cobalt base alloys, Mechanical properties
Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A	Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy. 949-958A
Mechanical Properties of $\text{Ti}-\text{Cr}-\text{Nb}$ Alloys and Prospects for High-Temperature Applications.	2149-2154A	Cobalt compounds, Composite materials
<b>Chromium base alloys, Phases (state of matter)</b>		High-Temperature Slow-Strain-Rate Compression Studies on $\text{CoAl}-\text{TiB}_2$ Composites. 2179-2188A
The Analysis of Bainite Plates in $\text{Cu}-\text{Zn}$ and $\text{Cr}-\text{Ni}$ .	831-835A	
<b>Chromium molybdenum nickel steels</b>		
See Nickel chromium molybdenum steels		
<b>Chromium molybdenum steels</b>		
See also Chromium molybdenum vanadium steels		
Nickel chromium molybdenum steels		
<b>Chromium molybdenum steels, Mechanical properties</b>		
Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.	925-933A	

## Cobalt compounds

<b>Cobalt compounds, Irradiation</b>		<b>Compressing</b>	
Sm—Co Permanent Magnets: Effects of Fast Neutron Irradiation.	1817-1821A	High-Temperature Slow-Strain-Rate Compression Studies on CoAl—TiB <sub>2</sub> Composites.	2179-2188A
<b>COD</b>		<b>Compression</b>	
See Crack opening displacement		See Compressing	
<b>Coefficient of expansion</b>		<b>Compression casting</b>	
See Thermal expansion		See Pressure casting	
<b>Coefficient of thermal expansion</b>		<b>Compression strength</b>	
See Thermal expansion		See Compressive strength	
<b>Coercive force</b>		<b>Compressive modulus</b>	
Microstructure, Crystallization, and Coercivity of Rare Earth—Iron—Boron Amorphous Alloy Ribbons.	2805-2814A	See Modulus of elasticity	
<b>Coercivity</b>		<b>Compressive properties</b>	
See Coercive force		See Compressive strength	
<b>Cold aging</b>		<b>Compressive strength</b>	
See Aging (natural)		Mechanical Properties of Ti—Cr—Nb Alloys and Prospects for High-Temperature Applications.	2149-2154A
<b>Cold cracking (welds)</b>		<b>Compressive yield strength</b>	
See Weld defects		See Compressive strength	
<b>Cold deformation</b>		<b>Computation</b>	
See Deformation		ChemSage—a Computer Program for the Calculation of Complex Chemical Equilibria.	1013-1023B
<b>Cold ductility</b>		A New Technique for Three-Dimensional Transient Heat Transfer Computations of Autogenous Arc Welding.	1033-1047B
See Ductility		A Thermodynamic Assessment of the Fe—Mn—C System.	2115-2123A
<b>Cold formability</b>		<b>Computer programs</b>	
See Formability		ChemSage—a Computer Program for the Calculation of Complex Chemical Equilibria.	1013-1023B
<b>Cold forming</b>		<b>Computer simulation</b>	
See Cold working		Solution Chemistry of HNO <sub>3</sub> /HF Pickle Mixtures.	5-9B
<b>Cold reduction</b>		Hydrogen Permeation in Stationary Arc-Melted Nickel 200.	579-587B
See Cold working		The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.	859-875A
<b>Cold rolling</b>		Influences of Matrix Ductility, Interfacial Bonding Strength, and Fiber Volume Fraction on Tensile Strength of Unidirectional Metal Matrix Composite.	971-977A
Stereoscopic Presentation of Rodrigues Vector Representation of the Full Three-Dimensional Disorientation of Iron Crystals by Rolling.	253-255A	Heat Transfer—Solidification Kinetics Modeling of Solidification of Castings.	997-1005A
<b>Cold stretching</b>		Precipitation Reactions and Strengthening Behavior in 18 wt.% Nickel Maraging Steels.	2655-2668A
See Stretching		Computer Simulation Study of Short-Range Order Hardening.	3165-3169A
<b>Cold working</b>		<b>Computing</b>	
See also Cold rolling		See Computation	
Lattice Imperfections Studied by X-Ray Diffraction in Deformed Aluminum-Based Alloys: Al—Ge Alloy.	2597-2598A	<b>Concast</b>	
Annealing Response of 3000 and 5000 Series Aluminum Alloys.	2643-2654A	See Continuous casting	
<b>Columbium</b>		<b>Concentration (stress)</b>	
See Niobium		See Stress concentration	
<b>Columbium base alloys</b>		<b>Concentration cell corrosion</b>	
See Niobium base alloys		See Pitting (corrosion)	
<b>Columbium compounds</b>		<b>Conducting sheet analog</b>	
See Niobium compounds		See Heat transmission	
<b>Columnar structure</b>		<b>Conductivity (electrical)</b>	
Grain Structures in Gas Tungsten-Arc Welds of Austenitic Stainless Steels With Ferrite Primary Phase.	979-986A	See Resistivity	
Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Decarburized Steel Weld Metals.	2047-2058A	<b>Constitutional diagrams</b>	
<b>Columnar structure, Composition effects</b>		See Phase diagrams	
The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.	2009-2019A	<b>Contact angle</b>	
<b>Combustion</b>		Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	2073-2082A
The Combustion Synthesis of Copper Aluminides.	567-577B	<b>Contact angle, Coating effects</b>	
<b>Compacted graphite iron, Heat treatment</b>		The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	1745-1751A
Mechanism of Bainitic Transformation in Compacted Graphite Cast Irons.	895-899A	<b>Contact pressure</b>	
<b>Compacting</b>		Rolling Contact Deformation, Etching Effects, and Failure of High-Strength Bearing Steel.	1921-1931A
See Explosive compacting		<b>Contact testing</b>	
<b>Compliance (elasticity)</b>		See Ultrasonic testing	
See Modulus of elasticity		<b>Contacts (electric)</b>	
<b>Components</b>		See Electric contacts	
See Automotive components		<b>Continuous casting</b>	
Rings		See also Direct chill casting	
<b>Composite materials</b>		Nitrogen Solubility in CaO—SiO <sub>2</sub> , CaO—MgO—SiO <sub>2</sub> , and BaO—MgO—SiO <sub>2</sub> Melts.	97-104B
See also Fiber composites		Nitrogen Solubility in CaO—CaF <sub>2</sub> —SiO <sub>2</sub> Melts.	105-109B
Laminates		The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	183-190B
Particulate composites		Simulation of Fluid Flow Inside a Continuous Slab-Casting Machine.	387-400B
Whisker composites		Finite Difference Heat-Transfer Modeling for Continuous Casting.	761-770B
<b>Composite materials, Development</b>		<b>Control</b>	
Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	441-446A	See Process control	
<b>Composite materials, Reactions (chemical)</b>		Temperature control	
High-Temperature Reactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.	2829-2837A	<b>Control surfaces</b>	
<b>Composite materials, Superconductivity</b>		See Airfoils	
High T <sub>c</sub> Composites Silver/Oxide Superconductors.	257-260A	<b>Controllability</b>	
<b>Compositions</b>		See Stability	
See Chemical composition		<b>Controlled rolling</b>	
<b>Compounds</b>		Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.	153-164A
See Aluminum compounds		Improvement in Toughness of Fe—Cr—Mn—C Steels by Thermal—Mechanical Treatments.	683-695A
Antimony compounds			
Intermetallics			
Tin compounds			
Transition metal compounds			

<b>Converters</b>		
See also Copper converters		
Slipping Resulting From Gas Injection in a Peirce-Smith Converter: the Period of the Standing Wave.	657-664B	1847-1851A
<b>Cooling</b>		
See also Air cooling		
Supercooling		
Microstructure and Its Development in Cu—Al—Ni Alloys.	575-588A	741-744A
<b>Cooling effects</b>		
Effects of Cooling Rate and $\gamma'$ Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.	1709-1717A	2601-2605A
<b>Cooling rate</b>		
Development of an Aluminum Sheet Alloy With Improved Formability.	165-175A	575-588A
Effect of Cooling Rate on Hardness of FeAl and NiAl.	2281-2282A	2669-2678A
Effect of Boron on the Microstructure and Tensile Properties of Dual-Phase Steel.	2547-2553A	
Structure of Continuously Cooled Low-Carbon Vanadium Steels.	2839-2855A	
Spray Casting of Strip Steel: Process Analysis.	3237-3256A	
<b>Copper, Casting</b>		
On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.	279-283B	811-815A
<b>Copper, Coating</b>		
Stress Distributions and Material Response in Thermal Spraying of Metallic and Ceramic Deposits.	377-385B	1541-1545A
<b>Copper, Composite materials</b>		
Creep Behavior of Nickel—Copper Laminate Composites With Controlled Composition Gradients.	2513-2520A	2599-2601A
<b>Copper, Corrosion</b>		
Stress Corrosion Cracking of Copper Bicrystals With (110)-Tilt $\Delta 3$ , $\Delta 9$ , and $\Delta 11$ Coincident Site Lattice Boundaries.	2355-2361A	831-835A
<b>Copper, Diffusion</b>		
Bicrystal Studies of Diffusion-Induced Grain Boundary Migration in Cu/Zn.	2363-2367A	
The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A	
<b>Copper, Extraction</b>		
Kinetic Study on the Reaction of Solid Silica With Molten Matte.	19-25B	3165-3169A
A Method to Estimate Free Energies of Formation of Mineral Sulfides.	401-402B	
The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B	
Competitive Solvation and Complexation of Cu(I), Cu(II), Pb(II), Zn(II), and Ag(II) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide Solutions Containing Chloride Ion With Applications to Hydrometallurgy.	439-448B	
Oxidative Leaching of an Offgrade/Complex Copper Concentrate in Chloride Lixivians.	611-620B	
Slipping Resulting From Gas Injection in a Peirce-Smith Converter: the Period of the Standing Wave.	657-664B	
Mathematical Modeling of Sulfide Flash Smelting Process. I. Model Development and Verification With Laboratory and Pilot Plant Measurements for Chalcopyrite Concentrate Smelting.	945-958B	
Mathematical Modeling of Sulfide Flash Smelting Process. II. Quantitative Analysis of Radiative Heat Transfer.	959-966B	3260-3264A
Removal of Antimony From Copper by Injection of Soda Ash.	967-975B	
Slipping Resulting From Gas Injection in a Peirce-Smith Converter: Water Modeling.	987-996B	889-893A
The Breakup of Bubbles Into Jets During Submerged Gas Injection.	997-1003B	2189-2199A
Applicability of Potential Flow Assumption for Bubbles in Copper-Making Condition.	1075-1079B	
<b>Copper, Mechanical properties</b>		
On the Scatter in Creep Rupture Times.	345-352A	2977-2983A
Estimation of the Yield Strength of Metals From Crystal Defect Energies.	1719-1723A	
Intergranular Fracture by Slip/Grain Boundary Interaction.	2431-2436A	1261-1271A
Creep Behavior of Nickel—Copper Solid Solution Alloys Below 0.55 T.	2601-2605A	2905-2917A
<b>Copper, Microstructure</b>		
Dislocation Structures Ahead of Advancing Cracks.	2411-2417A	
<b>Copper, Nondestructive testing</b>		
Ultrasonic Velocity Change With Creep Damage in Copper.	1725-1732A	
<b>Copper, Powder technology</b>		
The Physics of Mechanical Alloying: a First Report.	289-303A	1527-1540A
Degree of Pore-Grain Boundary Contact During Sintering.	2137-2139A	
<b>Copper, Reactions (chemical)</b>		
Dimerization of Boron.	2609A	
<b>Copper, Refining</b>		
A Mineralogical Overview of the Behavior of Nickel During Copper Electrocotrefining.	229-238B	
Electrometallurgy of Copper Refinery Anode Slimes.	629-635B	
<b>Copper, Sorption</b>		
Effect of Oxygen on Vacancy Cluster Morphology in Metals.	1037-1051A	
<b>Copper, Structural hardening</b>		
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A	3171-3186A
<b>Copper base alloys</b>		
See also Brasses		
Bronzes		
<b>Copper base alloys, Heat treatment</b>		
Composition Dependence of Aging Kinetics in Some Cu—Zn—Al Shape Memory Alloys.	1681-1688A	135-143A
		321-330A

## Crack initiation

Influence of Test Parameters on the Thermal—Mechanical Fatigue Behavior of a Superalloy.	389-399A	<b>Cracking (fracturing)</b> <i>See also</i> Crack closure Crack initiation Crack propagation Stress corrosion cracking	
Dislocation Structures in the Strain Localized Region in Fatigued 70/30 Brass and the Interaction With Grain Boundary.	667-671A	Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.	69-80A
Ultrasonic Velocity Change With Creep Damage in Copper. Measurement of Fatigue Accumulation in High-Strength Steels by Microstructural Examination.	1725-1732A	Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. II. Crack Opening Profile.	81-86A
Characterization of the Tip Field of a Discrete Dislocation Pile-Up for the Development of Physically Based Micromechanics.	1989-1996A	The Flow and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.	135-143A
Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2087-2089A	Acoustic Emission During Deformation of Dual-Phase Steels.	373-379A
Stress Corrosion Cracking of Copper Bicrystals With (110) Tilt $\Delta$ 3, $\Delta$ 9, and $\Delta$ 11 Coincident Site Lattice Boundaries.	2201-2208A	The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A
Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy.	2355-2361A	Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.	1287-1298A
<b>Crack initiation, Microstructural effects</b>	2687-2699A	Thermal Fatigue of Ti—24Al—11Nb/SCS-6.	1595-1602A
Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.	925-933A	<b>Cracking (fracturing), Corrosion effects</b>	1251-1259A
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A	Phase Transitions in Rapidly Solidified Stainless Steels Cationically Hydrogen Charged.	
<b>Crack opening displacement</b>		<b>Cracking (fracturing), Temperature effects</b>	
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.	69-80A	Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped Ni <sub>76</sub> Al <sub>19</sub> Ti <sub>5</sub> Single Crystals.	107-115A
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. II. Crack Opening Profile.	81-86A	<b>Cratering (wear)</b>	
Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. I. Fracture Behavior.	313-320A	<i>See</i> Wear	
Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. II. Micromechanism of Fracture.	321-330A	<b>Cratering (welding)</b>	
Fracture Behavior of Laminated Metal—Metallic Glass Composites.	2159-2168A	<i>See</i> Weld defects	
<b>Crack propagation</b>		<b>Creep (materials)</b>	
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.	69-80A	<i>See also</i> Creep life Creep rate Creep rupture strength Creep strength	
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. II. Crack Opening Profile.	81-86A	On the Scatter in Creep Rupture Times.	345-352A
The Flow and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.	135-143A	Creep Behavior of Ti—25Al—10Nb—3V—1Mo.	641-651A
Fatigue Crack Propagation in a Rapidly Solidified Al—12.4Fe—1.2V—2.3Si Alloy.	499-500A	Ultrasonic Velocity Change With Creep Damage in Copper.	1725-1732A
Rolling Contact Fatigue and Fatigue Crack Propagation in 1C—1.5Cr Bearing Steel in the Bainite Condition.	889-893A	Effect of Impurity Content on Creep Crack Growth Resistance in 1Cr1Mo0.25V Ferritic Steels.	1941-1949A
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A	Image Analysis for Grain Shape Characterization in Lamp Filaments.	2209-2214A
Effects of Intercal Strength on Fatigue Crack Growth in a Fiber-Reinforced Titanium-Alloy Composite.	1603-1612A	<b>Creep (materials), Anisotropy</b>	
Crack Path Morphology in Silicon Carbide Whisker-Reinforced Aluminum Composite.	1783-1785A	Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing.	3001-3010A
Fracture Behavior of Laminated Metal—Metallic Glass Composites.	2159-2168A	<b>Creep (materials), Cooling effects</b>	
Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.	2169-2177A	Effects of Cooling Rate and $\gamma'$ Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.	1709-1717A
Fatigue Threshold and Low-Rate Crack Propagation Properties for Structural Steels in 3% Sodium Chloride Aqueous Solution.	2189-2199A	<b>Creep (materials), High temperature effects</b>	
Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A	Some Observations on the High-Temperature Creep Behavior of 6061 Al—SiC Composites.	2089-2090A
Creep Crack Growth of HK40 Steel: Microstructural Effects. Interface Sliding, Migration, and Cracking During Fatigue Deformation of a Superplastic Aluminum—Zinc Eutectoid Alloy.	2237-2241A	<b>Creep (materials), Microstructural effects</b>	
Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy.	2497-2504A	Structure—Property Relationships in Bainitic Steels.	1527-1540A
The Nature of the Two Opening Levels Following an Overload in Fatigue Crack Growth.	2687-2699A	Creep Crack Growth of HK40 Steel: Microstructural Effects.	2237-2241A
Effects of Crack Tip Stress States and Hydride-Matrix Interaction Stresses on Delayed Hydride Cracking.	2717-2727A	<b>Creep (materials), Radiation effects</b>	
<b>Crack propagation, Corrosion effects</b>	2905-2917A	Radiation Effects on Time-Dependent Deformation: Creep and Growth.	1053-1063A
Hydrogen-Assisted Ductile Fracture in Spheroidized 1520 Steel. I. Axisymmetric Tension.	465-477A	Review of Small Specimen Test Techniques for Irradiation Testing.	1105-1119A
<b>Crack propagation, Deformation effects</b>		<b>Creep (materials), Temperature effects</b>	
Influence of Deformation-Induced Martensite on Fatigue Crack Propagation in 304-Type Steels.	3137-3152A	Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened Inconel MA-754.	177-187A
<b>Crack propagation, Environmental effects</b>		<b>Creep life, Alloying effects</b>	
An Investigation of Environmental Effects on Fatigue Crack Growth in Q1N (HY80) Steel.	2977-2983A	Influence of Molybdenum on the Creep Properties of Nickel-Based Superalloy Single Crystals.	381-388A
<b>Crack propagation, Impurity effects</b>		<b>Creep properties</b>	
The Influence of Oxygen on the Structure, Fracture, and Fatigue Crack Propagation Behavior of Ti—8.6 wt.% Al.	95-105A	<i>See</i> Creep (materials)	
Effect of Impurity Content on Creep Crack Growth Resistance in 1Cr1Mo0.25V Ferritic Steels.	1941-1949A	<b>Creep rate</b>	
<b>Crack propagation, Microstructural effects</b>		Creep Behavior of Nickel—Copper Solid Solution Alloys Below 0.55 $T_m$ .	2601-2605A
Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.	925-933A	<b>Creep rate, Alloying effects</b>	
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A	Influence of Molybdenum on the Creep Properties of Nickel-Based Superalloy Single Crystals.	381-388A
Effects of Temper Level on the Dependence of Fatigue Crack Growth Threshold and Crack Closure on the Prior Austenitic Grain Size.	3171-3186A	Effect of Cobalt Content on the Deformation Behavior of Rapidly Solidified Al—Fe—Ce Alloys.	2155-2158A
<b>Crack propagation, Temperature effects</b>		<b>Creep rate, Heating effects</b>	
Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened Inconel MA-754.	177-187A	Creep Behavior of Nickel—Copper Laminate Composites With Controlled Composition Gradients.	2513-2520A
Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a NiAl-Based Alloy.	2967-2976A	Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades.	3115-3125A
<b>Crack resistance</b>		<b>Creep rate, Radiation effects</b>	
<i>See</i> Crack propagation		Swelling Behavior of U—Pu—Zr Fuel.	517-528A
<b>Creep tests</b>		<b>Creep resistance</b>	
		<i>See</i> Creep strength	
		<b>Creep rupture strength, Cooling effects</b>	
		Effects of Cooling Rate and $\gamma'$ Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.	1709-1717A
		<b>Creep strength, Alloying effects</b>	
		Influence of Molybdenum on the Creep Properties of Nickel-Based Superalloy Single Crystals.	381-388A
		Effect of Boron on High-Temperature Creep Behavior of Austenitic Stainless Steel DIN 1.4970.	3033-3038A
		<b>Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing.</b>	3001-3010A

<b>Creeping</b> <i>See</i> Creep (materials)		
<b>Critical current (superconductivity), Radiation effects</b> Radiation Effects in High-Temperature Superconductors: a Brief Review.	1015-1019A	
<b>Critical temperature</b> <i>See</i> Transition temperature (superconductivity)		
<b>Critical temperature (superconductivity)</b> <i>See</i> Transition temperature (superconductivity)		
<b>Cross tension test</b> <i>See</i> Tension tests		
<b>Crushing strength</b> <i>See</i> Compressive strength		
<b>Cryolite</b> The Standard Gibbs Energy of Formation of $\text{CeF}_3$ and Its Activity Coefficient in Cryolite.	861-865B	
<b>Crystal defects</b> <i>See also</i> Dislocations Point defects Estimation of the Yield Strength of Metals From Crystal Defect Energies.	1719-1723A	
Lattice Changes of Iron—Nitrogen Martensite on Aging at Room Temperature.	2857-2867A	
<b>Crystal defects, Radiation effects</b> Effects of Preinjected Helium in Heavy-Ion Irradiated Nickel and Nickel—Copper Alloys.	1847-1851A	
<b>Crystal growth</b> Coarsening in Binary Solid—Liquid Mixtures. Crystallographic and Mechanistic Aspects of Growth by Shear and by Diffusional Processes.	27-37A 2369-2409A	
<b>Crystal lattices</b> <i>See</i> Hexagonal lattice		
<b>Crystal orientation</b> <i>See</i> Crystal structure		
<b>Crystal structure</b> <i>See also</i> Quasicrystalline structure Widmanstatten structure The Structure of the High-Temperature Phase $\text{MnAl}(h)$ and the Displacive Transformation From $\text{MnAl}(h)$ Into $\text{MnAl}_3$ . Characterization of the Morphological and Lattice Orientational Microstructure of As-Cast Aluminum Ingot.	1669-1672A	
Crystal Structure Analysis of $\gamma_1$ Cu—Al—Ni Martensite Using Conventional X-Rays and Synchrotron Radiations.	2265-2275A	
Evidence for HCP Needelike Martensite in a Duplex Fe—Mn—Al—C Alloy.	2669-2678A	
Microstructure of a Pressure-Cast $\text{Fe}_3\text{Al}$ Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.	2881-2889A	
<b>Crystal structure, Composition effects</b> Microstructure and Its Development in Cu—Al—Ni Alloys.	575-588A	
<b>Crystallinity</b> <i>See</i> Crystal structure		
<b>Crystallization</b> <i>See also</i> Recrystallization Microstructure, Crystallization, and Coercivity of Rare Earth—Iron—Boron Amorphous Alloy Ribbons.	2805-2814A	
<b>Crystallography</b> Simple Geometry and Crystallography Applied to Ferrous Bainites.	799-803A	
The Analysis of Bainite Plates in Cu—Zn and Cr—Ni. A Mechanism for the Formation of Lower Bainite.	831-835A	
Precipitation Reactions and Strengthening Behavior in 18 wt.% Nickel Maraging Steels.	1381-1390A	
<b>Crystals</b> <i>See</i> Single crystals	2655-2668A	
<b>CTT curves</b> <i>See</i> TTT curves		
<b>Current contacts</b> <i>See</i> Electric contacts		
<b>Current density</b> The Acceleration Mechanism of Stress on Anodic Dissolution of Bare Metal Surface.	3260-3264A	
<b>Current efficiency</b> Measurements of Magnetic Fields and Electromagnetically Driven Melt Flow in a Physical Model of a Hall—Héroult Cell.	59-69B	
Mathematical Models of Current Losses in Bipolar Cells.	783-790B	
The Use of Rotating Electrodes in the Electrolysis of Molten Zinc Chloride Electrolytes.	977-985B	
<b>Current voltage characteristics</b> Effect of Rare Earth Metal Oxide Additions to Tungsten Electrodes.	3221-3236A	
<b>Curves</b> <i>See</i> Stress strain curves TTT curves		
<b>Cycles</b> <i>See</i> Thermal cycling		
<b>Cyclic loads</b> The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels	653-665A	
<b>Cyclic heating</b> <i>See</i> Thermal cycling		
<b>Damage</b> <i>See also</i> Radiation damage Measurement of Fatigue Accumulation in High-Strength Steels by Microstructural Examination.	1989-1996A	
<b>Dampness</b> <i>See</i> Moisture content		
<b>Decarbonizing</b> Theoretical Interpretation of the Decarburization Mechanism in Convective Oxygen Steelmaking.	49-57B	
<b>Decomposition</b> <i>See</i> Phase decomposition		
<b>Decomposition reactions</b> <i>See</i> Pyrolysis		
<b>Decoration</b> The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials.	603-608A	
<b>Defects</b> <i>See</i> Casting defects Crystal defects Inclusions Weld defects		
<b>Deflagration</b> <i>See</i> Combustion		
<b>Deformability</b> <i>See</i> Formability		
<b>Deformation</b> <i>See also</i> Plastic deformation Prestraining Acoustic Emission During Deformation of Dual-Phase Steels.	373-379A	
<b>Deforming</b> <i>See</i> Deformation		
<b>Degassing</b> <i>See</i> Degassing		
<b>Degassing</b> Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B	
<b>Delaminating, Stress effects</b> On the Analysis of Delamination Fractures in High-Strength Steels.	2565-2575A	
<b>Dendrite</b> <i>See</i> Dendritic structure		
<b>Dendritic structure</b> Conservation of Mass and Momentum for the Flow of Interdendritic Liquid During Solidification.	173-181B	
Dendritic Solidification of Magnesium Alloy AZ91.	221-230A	
Dendrite Arm Climb by Temperature Gradient Zone Melting During Solidification of a High-Speed Tool Steel.	264-266A	
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A	
The Development of Solidification Microstructures in the Presence of Lateral Constraints.	1299-1310A	
Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems.	1311-1318A	
Microstructure of Stainless Steel Single-Crystal Electron Beam Welds.	1753-1766A	
<b>Denitration</b> Nitrogen Solubility in $\text{CaO}-\text{SiO}_2$ , $\text{CaO}-\text{MgO}-\text{SiO}_2$ , and $\text{BaO}-\text{MgO}-\text{SiO}_2$ Melts.	97-104B	
Nitrogen Solubility in $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Melts.	105-109B	
Thermodynamics of Nitrogen in $\text{Ca}-\text{CaF}_2$ Slags.	205-207B	
<b>Densification</b> Analysis of Early-Stage Sintering With Simultaneous Surface and Volume Diffusions.	305-312A	
<b>Deoxidation</b> <i>See</i> Deoxidizing		
<b>Deoxidizing</b> Equilibria Between Cerium or Neodymium and Oxygen in Molten Iron.	295-302B	
<b>Dephosphorizing</b> Sulfide Capacity of $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Slags.	121-129B	
Discussion of "Thermodynamics of $\text{Ca}-\text{CaF}_2$ and $\text{Ca}-\text{CaCl}_2$ Systems for the Dephosphorization of Steel".	1079-1081B	
<b>Deplication, Heating effects</b> Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690.	2097-2107A	
The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A	
<b>Deposition</b> <i>See</i> Vapor deposition		
<b>Desilicizing</b> Sulfide Capacity of $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Slags.	121-129B	
<b>Desorption</b> <i>See also</i> Outgassing Interaction Behavior of Nitrogen in Liquid Niobium.	845-853B	
Determination of Hydrogen Absorption and Desorption Processes in Aluminum Melts by Continuous Hydrogen Activity Measurements.	855-860B	
<b>Desulfurizing</b> Sulfide Capacity of $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Slags.	121-129B	
Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B	
Influence of Additives on Sulfide Capacity of $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Slags.	1081-1084B	

## Detection

<b>Detection</b>		
See Flaw detection		
<b>Deuteronium, Diffusion</b>		
Deuterium Surface Segregation in Titanium Alloys.	2003-2007A	
<b>Development</b>		
Leveraging Federal Research and Development for United States Science and Technology.	799-818A	
Leveraging Federal Research and Development for United States Science and Technology.	2617-2636A	
<b>Diagrams</b>		
See Phase diagrams		
S-N diagrams		
Stress strain curves		
<b>Die casting</b>		
Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	2073-2082A	
<b>Diffraction</b>		
See X-ray diffraction		
<b>Diffusion</b>		
See also Electrodiffusion		
Thermal diffusion		
The Combustion Synthesis of Copper Aluminides.	567-577B	
On Bainite Formation.	811-815A	
Nucleation and Growth of Bainite Crystals in Cu-Zn-Al Alloys.	1541-1545A	
Analysis of the Composition of $\alpha$ Plates Isothermally Formed in Titanium Binary Alloys.	1547-1556A	
Particle Coarsening Behavior of $\alpha$ - $\beta$ Titanium Alloys.	1645-1654A	
Interface Stability in the Ni-Cr-Al System. I. Morphological Stability of $\beta$ - $\gamma$ Diffusion Couple Interfaces at 1150°C.	1901-1910A	
Interface Stability in the Ni-Cr-Al System. II. Morphological Stability of $\beta$ -Ni50Al vs. $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.	1911-1919A	
A Study of the Thermotransport Behavior of Cobalt in Thorium.	2141-2148A	
Bicrystal Studies of Diffusion-Induced Grain Boundary Migration in Cu/Zn.	2363-2367A	
High-Temperature Interactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.	2829-2837A	
Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.	2897-2903A	
Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.	2919-2928A	
Improving the Calculation of Interdiffusion Coefficients.	3039-3047A	
<b>Diffusion, Alloying effects</b>		
Hydrogen Diffusion in Al-Li Alloys.	649-655B	
<b>Diffusion, Heating effects</b>		
Lithium Diffusion in Aluminum—Lithium Alloy 2090 Clad With 7072.	39-43A	
<b>Diffusion, Microstructural effects</b>		
Effect of Pearlite Morphology on Hydrogen Permeation, Diffusion, and Solubility in Carbon Steels.	3257-3258A	
<b>Diffusion, Radiation effects</b>		
Bulk Processing of Materials With Radiation.	1823-1827A	
<b>Diffusion bonding</b>		
See Diffusion welding		
<b>Diffusion coefficient</b>		
See Diffusion		
<b>Diffusion couples</b>		
See Diffusion		
<b>Diffusion welding</b>		
Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.	3085-3100A	
<b>Diffusivity</b>		
The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B	
Applications of the Square Root Diffusivity to Diffusion in Ni-Al-Cr Alloys.	2679-2685A	
Improving the Calculation of Interdiffusion Coefficients.	3039-3047A	
<b>Dimensions</b>		
See Particle size		
Thickness		
<b>Dioxides</b>		
See Silicon dioxide		
<b>Direct chill casting</b>		
Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.	557-585A	
ALSPEN—a Mathematical Model for Thermal Stresses in Direct Chill Casting of Aluminum Billets.	1049-1061B	
<b>Direct reduction</b>		
In Situ Measurement of Effective Gas Diffusivity Through Hematite Pellets During Stepwise Reductions.	677-687B	
<b>Directional solidification</b>		
Conservation of Mass and Momentum for the Flow of Interdendritic Liquid During Solidification.	173-181B	
Dendritic Solidification of Magnesium Alloy AZ91.	221-230A	
The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.	231-239A	
The Development of Solidification Microstructures in the Presence of Lateral Constraints.	1299-1310A	
Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems.	1311-1318A	
Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A	
<b>Directional solidification and heat treatment of Terfenol-D magnetostrictive materials.</b>		2249-2255A
Low-Energy Interfaces in NiO-ZrO <sub>2</sub> (CaO) Eutectic.		2309-2315A
Tensile and Impact Properties of Directionally Solidified Fe-40Al Intermetallic.		3027-3028A
<b>Directional solidification, Field effects</b>		
Influence of Low-Gravity Solidification on Heterogeneous Nucleation in Stable Iron-Carbon Alloys.		241-252A
<b>Discontinuous precipitates</b>		
See Cellular precipitates		
<b>Dishing</b>		
See Bulging		
<b>Dislocation climb</b>		
See Dislocation mobility		
<b>Dislocation density</b>		
Effect of Thermal Processing on the Microstructure of Ti-26Al-11Nb: Applications to Fusion Welding.		1273-1286A
An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Cu-12Zn-Sn and Ag-12Zn-Sn Alloys: Role of 1 wt.% Zn.		1319-1322A
An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Ag-1Sn-Zn Alloys: Role of 1 wt.% Sn.		1327-1330A
<b>Dislocation density, Cooling effects</b>		
Microscopy and Tensile Behavior of Melt-Spun Ni-Al-Fe Alloys.		959-970A
Effects of Cooling Rate and $\gamma'$ Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.		1709-1717A
<b>Dislocation density, Stress effects</b>		
Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.		673-682A
<b>Dislocation loops, Radiation effects</b>		
Effects of Preinjected Helium in Heavy-Ion Irradiated Nickel and Nickel-Copper Alloys.		1847-1851A
<b>Dislocation mobility</b>		
Acoustic Emission During Deformation of Dual-Phase Steels. Estimation of the Yield Strength of Metals From Crystal Defect Energies.		373-379A
An In Situ Transmission Electron Microscope Deformation Study of the Slip Transfer Mechanisms in Metals.		1719-1723A
<b>Dislocation mobility, Deformation effects</b>		
Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.		3215-3220A
<b>Dislocations</b>		
See also Dislocation loops		
Development of an Aluminum Sheet Alloy With Improved Formability.		165-175A
Deformation Structure in a Ti-24Al-11Nb Alloy.		627-639A
Dislocation Structures in the Strain Localized Region in Fatigued 70/30 Brass and the Interaction With Grain Boundary.		667-671A
Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Base Alloys.		1627-1643A
High-Temperature Slow-Strain-Rate Compression Studies on CoAl-TiB <sub>2</sub> Composites.		2179-2188A
Early Stages of Recrystallization in Nickel.		2215-2221A
Crystallographic and Mechanistic Aspects of Growth by Shear and by Diffusional Processes.		2369-2409A
Dislocation Structures Ahead of Advancing Cracks.		2411-2417A
Stress Gradients and Extent of Slip in Alpha Brass.		3075-3084A
Computer Simulation Study of Short-Range Order Hardening.		3165-3169A
Large-Strain Bauschinger Effects in FCC Metals and Alloys.		3201-3213A
<b>Dislocations, Deformation effects</b>		
Positron Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing.		2037-2045A
Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.		3215-3220A
<b>Dislocations, Radiation effects</b>		
Unified Theoretical Analysis of Experimental Swelling Data for Irradiated Austenitic and Ferritic/Martensitic Alloys. Modeling Dislocation Evolution in Irradiated Alloys.		1021-1035A
<b>Dislocations, Stress effects</b>		
Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.		673-682A
Characterization of the Tip Field of a Discrete Dislocation Pile-Up for the Development of Physically Based Micromechanics.		2087-2089A
<b>Dispersing, Field effects</b>		
Influence of Gravity on the Dispersoids During the Melting of an Oxide Dispersion-Strengthened Alloy (Inconel MA754).		753-755A
<b>Dispersion hardening alloys, Crystal growth</b>		
Effects of the Amount of $\gamma'$ and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Based Superalloys.		547-555A
<b>Dispersion hardening alloys, Irradiation</b>		
Contributions From Research on Irradiated Ferritic/Martensitic Steels to Materials Science and Engineering.		1065-1071A
<b>Dispersion hardening alloys, Mechanical properties</b>		
Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened Inconel MA-754.		177-187A
High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy MA 956.		353-364A

<b>Dispersion hardening alloys, Melting</b>		
Influence of Gravity on the Dispersoids During the Melting of an Oxide Dispersion-Strengthened Alloy (Inconel MA754).	753-755A	
<b>Dispersions</b>		
Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys.	59-68A	
<b>Dispersoids</b>		
See Dispersions		
<b>Displacement, Radiation effects</b>		
Bulk Processing of Materials With Radiation.	1823-1827A	
<b>Disimilar materials</b>		
The Fracture Energy of Bimaterial Interfaces.	2419-2429A	
<b>Dissolution</b>		
Kinetics of the Dissolution of Zinc Sulfide in an Oxidizing Slag.	867-872B	
The Effect of the Elemental Sulfur Reaction Product on the Leaching of Galena in Ferric Chloride Media.	935-943B	
Kinetics of Retrogression in Al—Zn—Mg—(Cu) Alloys.	2277-2280A	
Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.	2919-2928A	
<b>Dissolution, Heating effects</b>		
Dissolution and Melting of Secondary Al <sub>2</sub> Cu Phase Particles in an AlCu Alloy.	1689-1695A	
The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A	
<b>Dissolving</b>		
See Dissolution		
<b>Distillation</b>		
Gibbs Energies of Formation of Intermetallic Phases in the Systems Pt—Mg, Pt—Ca, and Pt—Ba and Some Applications.	521-527B	
<b>Domains</b>		
See Magnetic domains		
<b>DR process</b>		
See Direct reduction		
<b>Drawing (heat treatment)</b>		
See Tempering		
<b>Drill steels</b>		
See Tool steels		
<b>Drop tests</b>		
See Impact tests		
<b>Dual phase steels</b>		
See also Duplex stainless steels		
<b>Dual phase steels, Mechanical properties</b>		
Acoustic Emission During Deformation of Dual-Phase Steels. Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.	373-379A	
Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on Bauschinger Effect and Residual Phase Stresses.	717-724A	
Effect of Boron on the Microstructure and Tensile Properties of Dual-Phase Steel.	725-732A	
<b>Dual phase steels, Metal working</b>		
Improvement in Toughness of Fe—Cr—Mn—C Steels by Thermal—Mechanical Treatments.	683-695A	
<b>Ductile brittle transition</b>		
Morphology and Properties of Low-Carbon Bainite.	877-888A	
<b>Ductile brittle transition, Deformation effects</b>		
Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.	2555-2563A	
<b>Ductile fracture</b>		
A Study of Void Nucleation, Growth, and Coalescence in Spheroidized 1518 Steel.	117-134A	
<b>Ductile fracture, Corrosion effects</b>		
Hydrogen-Assisted Ductile Fracture in Spheroidized 1520 Steel. I. Axisymmetric Tension.	465-477A	
<b>Ductile fracture, Microstructural effects</b>		
Through-Thickness Fracture of a Ti—V—N Plate Steel.	1177-1191A	
<b>Ductile iron</b>		
See Nodular iron		
<b>Ductility</b>		
Influences of Matrix Ductility, Interfacial Bonding Strength, and Fiber Volume Fraction on Tensile Strength of Unidirectional Metal Matrix Composite.	971-977A	
The Effect of Matrix Reinforcement Reaction on Fracture in Ti—Al—4V—Base Composites.	1579-1587A	
Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.	2531-2538A	
<b>Ductility, Alloying effects</b>		
Fracture Toughness of Calcium-Modified Ultrahigh-Strength 4340 Steel.	2739-2746A	
Effect of Boron on High-Temperature Creep Behavior of Austenitic Stainless Steel DIN 1.4970.	3033-3038A	
<b>Ductility, Cooling effects</b>		
Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.	959-970A	
<b>Ductility, Corrosion effects</b>		
Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Base Superalloys.	365-372A	
Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A	
<b>Gas Phase Embrittlement of Nickel by Sulfur.</b>		3049-3061A
<b>Ductility, Impurity effects</b>		
The Influence of Oxygen on the Structure, Fracture, and Fatigue Crack Propagation Behavior of Ti—8.6 wt.% Al.	95-105A	
<b>Ductility, Microstructural effects</b>		
Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.	529-538A	
The Effect of Deformation-Induced Transformation on the Fracture Toughness of Commercial Titanium Alloys.	1733-1744A	
<b>Duplex stainless steels, Irradiation</b>		
Unified Theoretical Analysis of Experimental Swelling Data for Irradiated Austenitic and Ferritic/Martensitic Alloys.	1021-1035A	
<b>Duplex stainless steels, Mechanical properties</b>		
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A	
<b>Dynamic tests</b>		
See Impact tests		
<b>Dynamics</b>		
See also Kinetics		
Fluid Dynamics of a Stationary Weld Pool.	45-57A	
Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	925-928B	
<b>Dynapak process</b>		
See High energy rate forming		
<b>Dysprosium compounds, Directional solidification</b>		
Directional Solidification and Heat Treatment of Terfenol-D Magnetostrictive Materials.	2249-2255A	
<b>Effects</b>		
See Cooling effects		
<b>Efficiency</b>		
See Current efficiency		
<b>Elastic anisotropy</b>		
Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2521-2530A	
<b>Elastic constants</b>		
See also Elastic anisotropy		
Modulus of elasticity		
Thermal Expansion and Elastic Properties of High Gold—Tin Alloys.	1885-1889A	
<b>Elastic modulus</b>		
See Modulus of elasticity		
<b>Elastic properties</b>		
See Elastic constants		
<b>Elasticity</b>		
The Acoustoelastic Response of a Textured Material During Elastic—Plastic Deformation.	3011-3019A	
<b>Electric arc melting</b>		
See Electroslag melting		
<b>Electric arc welding</b>		
See Arc welding		
<b>Electric assemblies</b>		
See Electronic devices		
<b>Electric circuits</b>		
See Integrated circuits		
<b>Electric components</b>		
See Electronic devices		
<b>Electric conductors (materials)</b>		
See Electrolytes		
Superconductors		
<b>Electric contacts, Microstructure</b>		
Microstructure Analysis of Ohmic Contacts to GaAs.	2459-2463A	
<b>Electric current</b>		
See Alternating current		
<b>Electric devices</b>		
See Electronic devices		
<b>Electric equipment</b>		
See Electric contacts		
Electronic devices		
<b>Electric power generation</b>		
See Nuclear power generation		
Steam electric power generation		
<b>Electric welding</b>		
See Arc welding		
<b>Electrical conductivity</b>		
See Resistivity		
<b>Electrical properties</b>		
See Critical current (superconductivity)		
Current density		
Current voltage characteristics		
Resistivity		
<b>Electrical resistivity</b>		
See Resistivity		
<b>Electrocermamics</b>		
See Ceramics		
<b>Electrocoatings</b>		
See also Electroplates		
<b>Electrocoatings, Metallography</b>		
A Mossbauer Study of Zinc—Iron Intermediate Phases and Electrodeposited Coatings.	273-277A	

## Electrodeposition

<b>Electrodeposition</b> See Electroplating		
<b>Electrodes</b> See Anodes Cathodes Welding electrodes		
<b>Electrodiffusion</b> The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A	
<b>Electrogalvanizing</b> See Electroplating		
<b>Electrogas welding</b> See Gas metal arc welding		
<b>Electrohydrodynamics</b> See Magnetohydrodynamics		
<b>Electrolysis</b> See also Reduction (electrolytic) Consumable Cathode Selection in the Production of Neodymium—Iron Alloys via Molten Salt Electrolysis.	599-600B	
<b>Electrolytes</b> The Use of Rotating Electrodes in the Electrolysis of Molten Zinc Chloride Electrolytes. Applications of Solid Electrolytes in Thermodynamic Studies of Materials: a Review.	977-985B	
<b>Electrolytic cells</b> See Bi-polar cells	1223-1250A	
<b>Electrolytic dissolution</b> See Anodic dissolution		
<b>Electrolytic pickling</b> See Pickling		
<b>Electrolytic reduction</b> See Reduction (electrolytic)		
<b>Electromagnetic stirring</b> Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	723-731B	
<b>Electron beam welding</b> Microstructure of Stainless Steel Single-Crystal Electron Beam Welds. Analysis of Solidification Microstructures in Fe—Ni—Cr Single-Crystal Welds. Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferritic Steel.	1753-1766A	
<b>Electron beams</b> Studies of Carbides in a Rapidly Solidified High-Speed Steel.	3021-3026A	
<b>Electron bombardment</b> See Irradiation		
<b>Electron microscopy</b> See Scanning electron microscopy Transmission electron microscopy		
<b>Electron spectroscopy</b> See Auger electron spectroscopy		
<b>Electronic assemblies</b> See Electronic devices		
<b>Electronic components</b> See Electronic devices		
<b>Electronic devices</b> Microstructure Analysis of Ohmic Contacts to GaAs.	2459-2463A	
<b>Electronic equipment</b> See Electronic devices		
<b>Electroplates, Microstructure</b> Phase Formation in Electrodeposited and Thermally Annealed Al—Mn Alloys.	2869-2879A	
<b>Electroplating</b> The Effects of Lead on the Electrochemical and Adhesion Behavior of Zinc Electrodeposits.	81-86B	
<b>Electroreduction</b> See Electrowinning		
<b>Electrorefining</b> A Mineralogical Overview of the Behavior of Nickel During Copper Electrorefining. Electrometallurgy of Copper Refinery Anode Slimes.	229-238B	
<b>Electroslag melting</b> Thermochemistry of Calcium Oxide and Calcium Hydroxide in Fluoride Slags. Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	629-635B	
<b>Electrowinning</b> See also Hall Heroult process Fundamental Studies on Chlorine Behavior as Related to Zinc Electrowinning From Aqueous Chloride Electrolytes. Mathematical Models of Current Losses in Bipolar Cells. The Use of Rotating Electrodes in the Electrolysis of Molten Zinc Chloride Electrolytes.	621-627B	
<b>Elongation</b> Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallic.	723-731B	
<b>Elongation, Welding effects</b> Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.	251-258B	
	783-790B	
	977-985B	
	3027-3028A	
	2795-2804A	
<b>Embrittlement</b> See also Hydrogen embrittlement Liquid metal embrittlement		
<b>Embrittlement, Environmental effects</b> Gas Phase Embrittlement of Nickel by Sulfur.		3049-3061A
<b>Emission</b> See Acoustic emission		
<b>End uses</b> See Prosthetics		
<b>Energy</b> See Free energy Surface energy		
<b>Energy conservation</b> Optimal Control of an Aluminum Casting Furnace. I. The Control Model. Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization. Mathematical Models of Current Losses in Bipolar Cells.		487-494B
		495-500B
		783-790B
<b>Energy consumption</b> See Fuel consumption		
<b>Energy of dissociation</b> See Free energy Heat of formation		
<b>Energy of formation</b> See Free energy Heat of formation		
<b>Energy of fracture</b> See Toughness		
<b>Energy of solution</b> See Free energy		
<b>Engine components</b> See Turbine blades Turbine disks		
<b>Engineering</b> Leveraging Federal Research and Development for United States Science and Technology. Leveraging Federal Research and Development for United States Science and Technology.		799-818A
		2617-2636A
<b>Engines</b> See Gas turbine engines		
<b>Enthalpy</b> Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision.		285-294B
<b>Entropy</b> Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision.		285-294B
<b>Entropy of activation</b> See Entropy		
<b>Entropy of formation</b> See Entropy Heat of formation		
<b>Entropy of reaction</b> See Entropy		
<b>Entropy of solution</b> See Entropy		
<b>Entropy of transformation</b> See Entropy		
<b>Environment</b> See Corrosion environments Space environment		
<b>Equiaxed structure</b> Grain Structures in Gas Tungsten-Arc Welds of Austenitic Stainless Steels With Ferrite Primary Phase. The Effect of Microstructure on Localized Melting at Separation in Ti—6Al—4V Tensile Samples.		979-986A
		3127-3136A
<b>Equiaxed structure, Composition effects</b> The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.		2009-2019A
<b>Equilibrium diagrams</b> See Phase diagrams		
<b>Erosion rate, High temperature effects</b> The Erosion Behavior of 304 Stainless Steel at Elevated Temperatures.		3187-3199A
<b>Etching</b> Rolling Contact Deformation, Etching Effects, and Failure of High-Strength Bearing Steel.		1921-1931A
<b>Eutectic reactions, Alloying effects</b> Solidification in the System Al—Ge—Si: the Phase Diagram, Cooling Patterns, Eutectic Growth, and Modification.		733-740A
<b>Eutectic reactions, Composition effects</b> Microstructure and Its Development in Cu—Al—Ni Alloys.		575-588A
<b>Eutectics, Casting</b> Heat Transfer-Solidification Kinetics Modeling of Solidification of Castings.		997-1005A
<b>Eutectics, Heat treatment</b> Dissolution and Melting of Secondary Al <sub>2</sub> Cu Phase Particles in an AlCu Alloy.		1689-1695A
<b>Eutectics, Microstructure</b> Low-Energy Interfaces in NiO—ZrO <sub>2</sub> (CaO) Eutectic.		2309-2315A

<b>Eutectics, Phase transformations</b>	
Thermal Expansion and Elastic Properties of High Gold-Tin Alloys.	1885-1889A
<b>Eutectoid decomposition</b>	
Bainite Viewed Three Different Ways.	1343-1380A
<b>Eutectoid reactions</b>	
<i>See also</i> Eutectoid decomposition	
A Kinetic Model of the $\gamma \rightarrow \alpha + \text{Gr}$ Eutectoid Transformation in Spheroidal Graphite Cast Irons.	913-918A
<b>Eutectoids, Mechanical properties</b>	
Interface Sliding, Migration, and Cracking During Fatigue Deformation of a Superplastic Aluminum-Zinc Eutectoid Alloy.	2497-2504A
<b>Eutectoids, Microstructure</b>	
The Effect of Fatigue Deformation on Microstructural Evolution in a Superplastic Aluminum-Zinc Eutectoid Alloy.	2505-2511A
<b>Exothermic reactions</b>	
<i>See also</i> Carbothermic reactions	
The Combustion Synthesis of Copper Aluminides.	567-577B
Mathematical Modeling of Exothermic Leaching Reaction System: Pressure Oxidation of Wide Size Arsenopyrite Particulates.	827-837B
Interaction Behavior of Nitrogen in Liquid Niobium.	845-853B
<b>Expansion</b>	
<i>See</i> Thermal expansion	
<b>Experimental nuclear reactors</b>	
Swelling Behavior of U-Pu-Zr Fuel.	517-528A
<b>Explosive compacting</b>	
Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.	1589-1593A
<b>Extraction</b>	
<i>See also</i> Solvent extraction	
A Rotating Disk Study of Silver Dissolution With Thiourea in the Presence of Ferric Sulfate.	419-427B
The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B
<b>Extractive metallurgy</b>	
<i>See also</i> Hydrometallurgy	
The Dependence of the Oxidation State of Vanadium on the Oxygen Pressure in Melts of $\text{VO}_x$ , $\text{Na}_2\text{O}-\text{VO}_x$ , and $\text{CaO}-\text{SiO}_2-\text{VO}_x$ .	111-120B
Deuterium Exchange Studies of the Interfacial Rate of Reaction of Water Vapor With Silica-Saturated Iron Silicate Melts.	511-519B
Residence Time Distribution and Material Flow Studies in a Rotary Kiln.	1005-1011B
<b>Extrusion</b>	
<i>See</i> Forward extrusion	
Hot extrusion	
<b>Extrusion casting</b>	
<i>See</i> Pressure casting	
<b>Extrusions, Crystal growth</b>	
Effects of the Amount of $\gamma$ and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Base Superalloys.	547-555A
<b>Fabrication</b>	
The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	1745-1751A
<b>Face centered cubic metals</b>	
<i>See</i> FCC metals	
<b>Failure</b>	
<i>See also</i> Delaminating	
Fatigue failure	
On the Scatter in Creep Rupture Times.	345-352A
<b>Failure analysis</b>	
<i>See also</i> Fractography	
Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.	3085-3100A
<b>Fast nuclear reactors</b>	
Fuel Constituent Redistribution During the Early Stages of U-Pu-Zr Irradiation.	1871-1876A
<b>Fatigue (materials)</b>	
<i>See also</i> Corrosion fatigue	
Fatigue life	
Fatigue strength	
Low cycle fatigue	
Thermal fatigue	
Dislocation Structures in the Strain Localized Region in Fatigued 70/30 Brass and the Interaction With Grain Boundary.	667-671A
<b>Fatigue (materials), Microstructural effects</b>	
Structure-Property Relationships in Bainitic Steels.	1527-1540A
<b>Fatigue (materials), Radiation effects</b>	
Review of Small Specimen Test Techniques for Irradiation Testing.	1105-1119A
<b>Fatigue cracking</b>	
<i>See</i> Fatigue (materials)	
<b>Fatigue failure</b>	
Fatigue Crack Propagation in a Rapidly Solidified Al-12.4Fe-1.2V-2.3Si Alloy.	499-500A
Dislocation Structures in the Strain Localized Region in Fatigued 70/30 Brass and the Interaction With Grain Boundary.	667-671A
<b>Ferromagnetic materials</b>	
<i>See</i> Magnetite	
<b>Ferromagnetic materials</b>	
Rolling Contact Fatigue and Fatigue Crack Propagation in 1C-1.5Cr Bearing Steel in the Bainite Condition.	889-893A
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
Thermal Fatigue of Ti-24Al-11Nb/SCS-6.	1159-1602A
Effects of Interfacial Strength on Fatigue Crack Growth in a Fiber-Reinforced Titanium-Alloy Composite.	1603-1612A
Crack Path Morphology in Silicon Carbide Whisker-Reinforced Aluminum Composite.	1783-1785A
Measurement of Fatigue Accumulation in High-Strength Steels by Microstructural Examination.	1989-1996A
Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.	2169-2177A
Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Base Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A
Interface Sliding, Migration, and Cracking During Fatigue Deformation of a Superplastic Aluminum-Zinc Eutectoid Alloy.	2497-2504A
The Nature of the Two Opening Levels Following an Overload in Fatigue Crack Growth.	2717-2727A
<b>Fatigue failure, Deformation effects</b>	
Influence of Deformation-Induced Martensite on Fatigue Crack Propagation in 304-Type Steels.	3137-3152A
<b>Fatigue failure, Impurity effects</b>	
The Influence of Oxygen on the Structure, Fracture, and Fatigue Crack Propagation Behavior of Ti-8.6 wt.% Al.	95-105A
<b>Fatigue failure, Microstructural effects</b>	
Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.	925-933A
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A
Effects of Temper Level on the Dependence of Fatigue Crack Growth Threshold and Crack Closure on the Prior Austenitic Grain Size.	3171-3186A
<b>Fatigue failure, Temperature effects</b>	
Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened Inconel MA-754.	177-187A
Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a Ni <sub>3</sub> Al-Based Alloy.	2967-2976A
<b>Fatigue fracture</b>	
<i>See</i> Fatigue failure	
<b>Fatigue life</b>	
Influence of Test Parameters on the Thermal-Mechanical Fatigue Behavior of a Superalloy.	389-399A
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
<b>Fatigue life, Deformation effects</b>	
Rolling Contact Deformation, Etching Effects, and Failure of High-Strength Bearing Steel.	1921-1931A
<b>Fatigue life, Microstructural effects</b>	
Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.	925-933A
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A
The Fatigue Life of a Complex Microstructure With Bainite in a High Carbon Cr-Si Tool Steel.	2282-2286A
<b>Fatigue properties</b>	
<i>See</i> Fatigue (materials)	
<b>Fatigue strength</b>	
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
<b>Fatigue strength, Microstructural effects</b>	
Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.	925-933A
<b>FCC metals, Heat treatment</b>	
Study of Annealing Twins in FCC Metals and Alloys.	2891-2896A
<b>FCC metals, Structural hardening</b>	
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A
<b>Feeding</b>	
Modeling of Feeding Behavior of Solidifying Al-7Si-0.3Mg Alloy Plate Casting.	715-722B
<b>Ferric compounds</b>	
<i>See</i> Iron compounds	
<b>Ferrite</b>	
Microstructure of Welded and Weld-Simulated 3Cr-1.5Mo-0.1V Ferrite Steel.	2021-2036A
<b>Ferritic stainless steels, Irradiation</b>	
Contributions From Research on Irradiated Ferritic Martensitic Steels to Materials Science and Engineering.	1065-1071A
<b>Ferritic stainless steels, Mechanical properties</b>	
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A
<b>Ferritic stainless steels, Welding</b>	
The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.	2009-2019A
<b>Ferroalloys</b>	
Metallic Solvent Extraction of Manganese and Titanium From Ferroalloys.	217-228B
<b>Ferromagnetic materials</b>	
<i>See</i> Magnetite	

## Ferrous alloys

<b>Ferrous alloys</b>	
See also Steels	
<b>Ferrous alloys, Casting</b>	
A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.	697-706B
<b>Ferrous alloys, Corrosion</b>	
Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Basis Superalloys.	365-372A
<b>Ferrous alloys, Crystal lattices</b>	
Lattice Changes of Iron—Nitrogen Martensite on Aging at Room Temperature.	2857-2867A
<b>Ferrous alloys, Heat treatment</b>	
The Tempering of Iron—Nitrogen Martensite; Dilatometric and Calorimetric Analysis.	13-26A
Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: The Clustering—Ordering Synergy.	589-602A
<b>Ferrous alloys, Irradiation</b>	
Radiation as a Tool in Understanding Phase Transformations.	1073-1082A
Bulk Processing of Materials With Radiation.	1823-1827A
<b>Ferrous alloys, Magnetic properties</b>	
Microstructure, Crystallization, and Coercivity of Rare Earth—Iron—Boron Amorphous Alloy Ribbons.	2805-2814A
<b>Ferrous alloys, Mechanical properties</b>	
High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy M 95B.	353-364A
Composite Ferrous Powder Metallurgy Structures: Mechanical Properties and Stress Analysis.	2943-2955A
Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallic.	3027-3028A
<b>Ferrous alloys, Microstructure</b>	
Evidence for HCP Needelike Martensite in a Duplex Fe—Mn—Al—C Alloy.	2815-2817A
<b>Ferrous alloys, Structural hardening</b>	
Modulated Structure and Magnetic Properties of Age-Hardenable Fe—Mn—Al—C Alloys.	5-11A
Orientation Relationships Among M <sub>23</sub> C <sub>6</sub> , M <sub>5</sub> C, and Austenite in an Fe—Mn—Al—Mo—C Alloy.	567-574A
<b>Ferrous alloys, Synthesis</b>	
Consumable Cathode Selection in the Production of Neodymium—Iron Alloys via Molten Salt Electrolysis.	599-600B
<b>Ferrous alloys, Welding</b>	
A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.	479-488A
<b>Ferrous compounds</b>	
See Iron compounds	
<b>Ferrous metals</b>	
See Ferrous alloys	
<b>Fiber composites</b>	
A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	1201-1207A
<b>Fiber composites, Casting</b>	
Interaction of Al <sub>2</sub> O <sub>3</sub> —ZrO <sub>2</sub> Fibers With a Ti—Al Matrix During Pressure Casting.	213-219A
The Infiltration of Aluminum Into Silicon Carbide Compacts. The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	475-485B
Infiltration of Fiber Preforms by a Binary Alloy. I. Theory. Energistics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	1745-1751A
Infiltration of Fiber Preforms by a Pure Metal. III. Capillary Phenomena.	2059-2072A
Corrigenda and Comments on the Infiltration of Fiber Preforms.	2073-2082A
2257-2263A	
2287A	
<b>Fiber composites, Mechanical properties</b>	
Influences of Matrix Ductility, Interfacial Bonding Strength, and Fiber Volume Fraction on Tensile Strength of Unidirectional Metal Matrix Composite.	971-977A
Thermal Fatigue of Ti—24Al—11Nb/SCS-6.	1595-1602A
Effects of Interfacial Strength on Fatigue Crack Growth in a Fiber-Reinforced Titanium-Alloy Composite.	1603-1612A
Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.	2701-2707A
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	2747-2757A
1571-1578A	
2881-2889A	
<b>Fiber composites, Microstructure</b>	
A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.	1559-1569A
Microstructure of a Pressure-Cast Fe <sub>3</sub> Al Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.	1559-1569A
<b>Fiber composites, Powder technology</b>	
Reaction Zone Microstructure in a Ti <sub>3</sub> Al + Nb/SiC Composite.	2209-2214A
<b>Fiber reinforcement</b>	
See Filaments	
<b>Filaments, Metallography</b>	
Image Analysis for Grain Shape Characterization in Lamp Filaments.	2209-2214A
<b>Filler metal</b>	
See Brazing alloys	
Weld metal	
<b>Films</b>	
See Thin films	
<b>Finishing baths</b>	
See Plating baths	
<b>Finite element method</b>	
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.	411-420A
Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on Bauschinger Effect and Residual Phase Stresses.	725-732A
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.	2009-2019A
Experimental Assessment of Structure and Property Predictions During Hot Working.	3101-3114A
<b>Finsider process</b>	
See Direct reduction	
<b>Fissile materials</b>	
See Nuclear fuels	
<b>Fission reactors</b>	
See Nuclear reactors	
<b>Flame reduction process</b>	
See Direct reduction	
<b>Flash smelting</b>	
Mathematical Modeling of Sulfide Flash Smelting Process. I. Model Development and Verification With Laboratory and Pilot Plant Measurements for Chalcocite Concentrate Smelting.	945-958B
Mathematical Modeling of Sulfide Flash Smelting Process. II. Quantitative Analysis of Radiative Heat Transfer.	959-966B
<b>Flaw detection</b>	
Positron Spectroscopy for Materials Characterization.	1121-1131A
<b>Flexural vibration</b>	
See Fatigue (materials)	
<b>Floating zone melting</b>	
See Zone melting	
<b>Floating zone refining</b>	
See Zone melting	
<b>Flow</b>	
See Fluid flow	
<b>Flow stress</b>	
See Yield strength	
<b>Fluid flow</b>	
See also Gas flow	
Fluid Dynamics of a Stationary Weld Pool.	45-57A
Measurements of Magnetic Fields and Electromagnetically Driven Melt Flow in a Physical Model of a Hall—Héroult Cell.	59-69B
The Spout of Air Jets Upwardly Injected Into a Water Bath. Conservation of Mass and Momentum for the Flow of Interdendritic Liquid During Solidification.	71-80B
The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	173-181B
Fluid Flow in Pachuca (Air-Agitated) Tanks. II. Mathematical Modeling of Flow in Pachuca Tanks.	183-190B
A Study on the Mathematical Modeling of Turbulent Recirculating Flows in Gas-Stirred Ladles.	191-203B
Simulation of Fluid Flow Inside a Continuous Slab-Casting Machine.	269-277B
Optimal Control of an Aluminum Casting Furnace. I. The Control Model.	387-400B
Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.	487-494B
Modeling of Materials Synthesis in Hybrid Plasma Reactors: Production of Silicon by Thermal Decomposition of SiCl <sub>4</sub> .	495-500B
Modeling of Interfacial Phenomena in Welding.	589-598B
Modeling of Feeding Behavior of Solidifying Al—7Si—0.3Mg Alloy Plate Casting.	600-603B
Three-Dimensional Transport Phenomena in Chemical Vapor Deposition Equipment: a Comparison of Theoretical Predictions With Measurements and Some Concepts Regarding Equipment Design.	715-722B
Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	753-760B
Heat Transfer—Solidification Kinetics Modeling of Solidification of Castings.	771-781B
Infiltration of Fiber Preforms by a Binary Alloy. I. Theory.	997-1005A
<b>Fluid flow, Field effects</b>	
Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	2059-2072A
<b>Fluid mold casting</b>	
See Centrifugal casting	
<b>Fluidity</b>	
See Viscosity	
<b>Fluidized beds</b>	
The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. I. Intrinsic Kinetics.	321-330B
The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. II. Mathematical Modeling of the Fluidized-Bed Process.	331-340B
The Selective Carbochlorination of Iron From Titaniferous Magnetite Ore in a Fluidized Bed.	341-347B

<b>Flux pinning</b>	
High T <sub>c</sub> Composite Silver/Oxide Superconductors.	257-260A
<b>Fluxing</b>	
Nitrogen Solubility in CaO—CaF <sub>2</sub> —SiO <sub>2</sub> Melts.	105-109B
Fuming of Stannous Oxide From Silicate Melts.	449-454B
Characterization of Bonding and Crystalline Phases in Fluxed Pellets Using Peat Moss and Bentonite as Binders.	463-474B
<b>Foils (structural shapes)</b>	
See Airfoils	
<b>Forging</b>	
See Press forging	
Upsetting	
<b>Formability</b>	
Development of an Aluminum Sheet Alloy With Improved Formability.	185-175A
Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.	331-343A
<b>Forming</b>	
See Bulging	
High energy rate forming	
Piercing	
Stretching	
Superplastic forming	
<b>Forming limit</b>	
See Formability	
<b>Forward extrusion</b>	
Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.	1969-1987A
<b>Fractional distillation</b>	
See Distillation	
<b>Fractionation</b>	
See Distillation	
<b>Fractography</b>	
Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Base Superalloys.	365-372A
Hydrogen-Assisted Ductile Fracture in Spheroidized 1520 Steel. I. Axisymmetric Tension.	465-477A
Microscopic Observations of Adiabatic Shear Bands in Three Different Steels.	1161-1175A
Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.	2169-2177A
The Effect of Microstructure on Localized Melting at Separation in Ti—6Al—4V Tensile Samples.	3127-3136A
<b>Fracture mechanics</b>	
See also Crack opening displacement	
Fracture Mechanics and the Nuclear Industry.	1097-1104A
Characterization of the Tip Field of a Discrete Dislocation Pile-Up for the Development of Physically Based Micromechanics.	2087-2089A
The Fracture Energy of Bimaterial Interfaces.	2419-2429A
Intergranular Fracture by Slip/Grain Boundary Interaction.	2431-2436A
On the Analysis of Delamination Fractures in High-Strength Steels.	2565-2575A
The Nature of the Two Opening Levels Following an Overload in Fatigue Crack Growth.	2717-2727A
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	2747-2757A
<b>Fracture strength</b>	
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	2747-2757A
<b>Fracture toughness</b>	
Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy.	2687-2699A
<b>Fracture toughness, Alloying effects</b>	
Fracture Toughness of Calcium-Modified Ultrahigh-Strength 4340 Steel.	2739-2746A
<b>Fracture toughness, Deformation effects</b>	
Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.	2555-2563A
<b>Fracture toughness, Microstructural effects</b>	
The Effect of Deformation-Induced Transformation on the Fracture Toughness of Commercial Titanium Alloys.	1733-1744A
<b>Fractures</b>	
Creep Behavior of Ti—25Al—10Nb—3V—1Mo.	641-651A
<b>Fracturing</b>	
See also Brittle fracture	
Cracking (fracturing)	
Ductile fracture	
Intergranular fracture	
Structure, Tensile Deformation, and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.	809-825A
Fracture Mechanics and the Nuclear Industry.	1097-1104A
A General Method for Estimation of Fracture Surface Roughness. I. Theoretical Aspects.	1193-1199A
A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	1201-1207A
<b>Free energy</b>	
See also Stacking fault energy	
Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision.	285-294B
Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.	313-320B
A Method to Estimate Free Energies of Formation of Mineral Sulfides.	401-402B
ChemSage—a Computer Program for the Calculation of Complex Chemical Equilibria.	1013-1023B
<b>Free energy of dissociation</b>	
See Free energy	
Heat of formation	
<b>Free energy of formation</b>	
See Free energy	
Heat of formation	
<b>Free energy of reaction</b>	
See Free energy	
<b>Free energy of solution</b>	
See Free energy	
<b>Free energy of transformation</b>	
See Free energy	
<b>Friction</b>	
See Internal friction	
<b>Fuel consumption</b>	
Swelling Behavior of U—Pu—Zr Fuel.	517-528A
<b>Fuels</b>	
See Nuclear fuels	
<b>Furnaces</b>	
See Blast furnaces	
Kilns	
Melting furnaces	
<b>Fused salt electrolysis</b>	
See Hall-Heroult process	
<b>Fused salts</b>	
Model for Silicate Melts.	404-406B
Comminable Cathode Selection in the Production of Neodymium—Iron Alloys via Molten Salt Electrolysis.	599-600B
The Use of Rotating Electrodes in the Electrolysis of Molten Zinc Chloride Electrolytes.	977-985B
<b>Fused salts, Reactions (chemical)</b>	
Equilibration Between Ferrous and Ferric Chlorides in Molten Chloride Salts.	131-133B
<b>Fusion welding</b>	
See Arc welding	
Electron beam welding	
Laser beam welding	
<b>Galena, Beneficiation</b>	
Kinetics of Galena Leaching in Hydrochloric Acid—Chloride Solutions.	11-17B
The Effect of the Elemental Sulfur Reaction Product on the Leaching of Galena in Ferric Chloride Media.	935-943B
<b>Galium arsenide, Microstructure</b>	
Microstructure Analysis of Ohmic Contacts to GaAs.	2459-2463A
<b>Galium compounds</b>	
See Gallium arsenide	
<b>Galvanizing</b>	
See Hot dip galvanizing	
<b>Galvannealing</b>	
See Annealing	
<b>Gamma ray spectroscopy</b>	
See Mossbauer spectroscopy	
<b>Gas evolution</b>	
See Outgassing	
<b>Gas flow</b>	
Plume Characteristics and Liquid Circulation in Gas Injection Through a Porous Plug.	637-648B
Slopping Resulting From Gas Injection in a Peirce—Smith Converter: the Period of the Standing Wave.	657-664B
A Study on Measurement of Gas/Liquid Interfacial Area in a Dispersed Gas Injection System.	665-675B
Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays.	899-912B
Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	925-928B
Removal of Antimony From Copper by Injection of Soda Ash.	967-975B
Slopping Resulting From Gas Injection in a Peirce—Smith Converter: Water Modeling.	987-996B
The Breakup of Bubbles Into Jets During Submerged Gas Injection.	997-1003B
Applicability of Potential Flow Assumption for Bubbles in Copper-Making Condition.	1075-1079B
<b>Gas metal arc welding</b>	
Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Deoxidized Steel Weld Metals.	2047-2058A
<b>Gas permeability</b>	
See Permeability	
<b>Gas tungsten arc welding</b>	
A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.	479-488A
Hydrogen Permeation in Stationary Arc-Melted Nickel 200.	579-587B
Modeling of Interfacial Phenomena in Welding.	600-603B
Grain Structures in Gas Tungsten-Arc Welds of Austenitic Stainless Steels With Ferrite Primary Phase.	979-986A
A New Technique for Three-Dimensional Transient Heat Transfer Computations of Autogenous Arc Welding.	1033-1047B
Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb: Applications to Fusion Welding.	1273-1286A
Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.	1287-1298A
The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.	2009-2019A

## Gas tungsten arc welding

Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.	2585-2596A	Grain boundaries, Heating effects	Dissolution and Melting of Secondary $Al_2Cu$ Phase Particles in an $AlCu$ Alloy.	1689-1695A
Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.	2795-2804A	Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690.	2097-2107A	
Effect of Rare Earth Metal Oxide Additions to Tungsten Electrodes.	3221-3236A			
<b>Gas turbine engines, Materials selection</b>		<b>Grain boundaries, Radiation effects</b>	Experimental Studies of $U-Pu-Zr$ Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II.	1863-1870A
Particle Coarsening Behavior of $\alpha-\beta$ Titanium Alloys.	1645-1654A	<b>Grain boundary migration</b>	Twin Boundaries in $CS_4-TiSi_2$ .	2317-2322A
<b>Gas turbines</b>		Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering.	2935-2941A	
See Gas turbine engines				
<b>Gas turbines, Materials selection</b>		<b>Grain boundary migration, Deformation effects</b>	The Effect of Fatigue Deformation on Microstructural Evolution in a Superplastic Aluminum-Zinc Eutectoid Alloy.	2505-2511A
A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.	479-488A	<b>Grain boundary migration, Diffusion effects</b>	Bicyclital Studies of Diffusion-Induced Grain Boundary Migration in $Cu/Zn$ .	2363-2367A
<b>Gating and risering</b>		<b>Grain boundary sliding</b>	Interface Sliding, Migration, and Cracking During Fatigue Deformation of a Superplastic Aluminum-Zinc Eutectoid Alloy.	2497-2504A
Modeling of Feeding Behavior of Solidifying $Al-7Si-0.3Mg$ Alloy Plate Casting.	715-722B	<b>Grain growth</b>	Subgrain Growth in Nickel During Recovery.	500-503A
<b>Geometry</b>		Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.	557-565A	
Simple Geometry and Crystallography Applied to Ferrous Bainites.	799-803A	Interface Migration During Recrystallization: The Role of Recovery and Stored Energy Gradients.	1143-1149A	
<b>Germanium, Alloying elements</b>		<b>Grain orientation, Deformation effects</b>	Development of Orientation Coherence in Plane-Strain Deformation.	2223-2236A
Solidification in the System $Al-Ge-Si$ : The Phase Diagram, Coring Patterns, Eutectic Growth, and Modification.	733-740A	The Acoustoelastic Response of a Textured Material During Elastic-Plastic Deformation.	3011-3019A	
<b>Germanium<sup>(II)</sup> compounds, Mechanical properties</b>		<b>Grain refinement, Alloying effects</b>	Effects on Microstructure and Tensile Properties of a Zirconium Addition to a $Cu-Al-Ni$ Shape Memory Alloy.	741-744A
Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A	<b>Grain size</b>	Development of an Aluminum Sheet Alloy With Improved Formability.	165-175A
Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2709-2715A	High Strain-Rate-Induced Cleavage Fracture in Mild Carbon Steel.	431-439A	
<b>Gibbs free energy</b>		Effect of Prior Austenitic Grain Size on Stress Corrosion Cracking of a High-Strength Steel.	503-505A	
See Free energy		Structure, Tensile Deformation, and Fracture of a $Ti_3Al-Nb$ Alloy.	609-625A	
<b>Glass</b>		The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys.	744-748A	
See Metallic glasses		Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlite Steels.	925-933A	
<b>Gold, Atomic properties</b>		Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A	
Atomic Structure and Energy of $\Sigma = 5$ Tilt Boundaries in Gold.	2299-2307A	Nanocrystalline Metals Prepared by High-Energy Ball Milling. New Aspects on the Superplasticity of Fine-Grained 7475 Aluminum Alloys.	2333-2337A	
<b>Gold, Diffusion</b>		Effects of Temper Level on the Dependence of Fatigue Crack Growth Threshold and Crack Closure on the Prior Austenitic Grain Size.	2729-2737A	
Improving the Calculation of Interdiffusion Coefficients.	3039-3047A	<b>Grain size, Deformation effects</b>	Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.	1969-1987A
<b>Gold, Extraction</b>		<b>Grain size, Heating effects</b>	Study of Annealing Twins in FCC Metals and Alloys.	2891-2896A
$^{197}Au$ Mossbauer Study of the Gold Species Adsorbed on Carbon From Cyanide Solutions.	239-249B	<b>Grain size, Microstructural effects</b>	Effects of the Amount of $\gamma'$ and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Based Superalloys.	547-555A
The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B	<b>Grain structure</b>	See also Acicular structure	
<b>Gold, Mechanical properties</b>		Dendritic structure		
The Fracture Energy of Bimaterial Interfaces.	2419-2429A	Equiaxed structure		
<b>Gold, Ternary systems</b>		Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun $Al-Fe$ Alloys.	205-212A	
The $Ag-Au-Si$ System: Experimental and Calculated Phase Diagram.	1877-1884A	Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun $Al-Fe$ Alloys".	205-212A	
<b>Gold base alloys, Phase transformations</b>		Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.	557-565A	
Thermal Expansion and Elastic Properties of High Gold-Tin Alloys.	1885-1889A	Structure, Tensile Deformation, and Fracture of a $Ti_3Al-Nb$ Alloy.	609-625A	
<b>GP zone</b>		Microstructure of Stainless Steel Single-Crystal Electron Beam Welds.	1753-1766A	
See Guinier Preston zone		Analysis of Solidification Microstructures in $Fe-Ni-Cr$ Single-Crystal Welds.	1767-1782A	
<b>Gradients</b>		Image Analysis for Grain Shape Characterization in Lamp Filaments.	2209-2214A	
See Temperature gradient		<b>Grain structure, Deformation effects</b>	Experimental Assessment of Structure and Property Predictions During Hot Working.	3101-3114A
<b>Grain boundaries</b>		<b>Grain structure, Field effects</b>	Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	723-731B
The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials.	603-608A	<b>Grain structure, Heating effects</b>	Modulated Structure and Magnetic Properties of Age-Hardenable $Fe-Mn-Al-C$ Alloys.	5-11A
Dislocation Structures in the Strain Localized Region in Fatigue 70/30 Brass and the Interaction With Grain Boundary.	667-671A	<b>Graphite, Composite materials</b>	The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of $Al/SiC$ and $Al/Graphite$ Composites.	231-239A
A Mechanism for Hydrogen-Induced Intergranular Stress Corrosion Cracking in Alloy 600.	1261-1271A			
Particle Coarsening Behavior of $\alpha-\beta$ Titanium Alloys.	1645-1654A			
The Border Hardening Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels.	1697-1708A			
Estimation of the Yield Strength of Metals From Crystal Deformation Energies.	1719-1723A			
Ultrasonic Velocity Change With Creep Damage in Copper.	1725-1732A			
Degree of Pore-Grain Boundary Contact During Sintering.	2137-2139A			
Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A			
Image Analysis for Grain Shape Characterization in Lamp Filaments.	2209-2214A			
Early Stages of Recrystallization in Nickel.	2215-2221A			
Creep Crack Growth of HK40 Steel: Microstructural Effects.	2237-2241A			
On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A			
Stress Corrosion Cracking of Copper Bicrystals With $\{110\}-\{1\bar{1}3\}, \{1\bar{1}9\}$ and $\{1\bar{1}1\}$ Coincident Site Lattice Boundaries.	2355-2361A			
Intergranular Fracture by Slip/Grain Boundary Interaction.	2431-2436A			
An In Situ Transmission Electron Microscope Deformation Study of the Slip Transfer Mechanisms in Metals.	2437-2447A			
The Evolution of Microstructure in $Al-2Cu$ Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A			
High-Resolution Auger Electron Spectroscopy of Grain Boundary Phosphorus Segregation in $NiCrMoV$ and $NiCr$ Steels.	2817-2821A			
<b>Grain boundaries, Alloying effects</b>				
Effect of Silicon Addition on the Microstructure of an $Fe-8.0Al-29.0Mn-0.90C$ Alloy.	1891-1899A			
<b>Grain boundaries, Atomic properties</b>				
Atomic Structure and Energy of $\Sigma = 5$ Tilt Boundaries in Gold.	2299-2307A			
<b>Grain boundaries, Corrosion effects</b>				
Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A			

Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	2073-2082A	Heat flux <i>See</i> Heat transmission
<b>Gravitation</b> Influence of Gravity on the Dispersoids During the Melting of an Oxide Dispersion-Strengthened Alloy (Inconel MA754).	753-755A	Heat of decomposition <i>See</i> Heat of formation
<b>Gravity</b> <i>See</i> Gravitation		Heat of dissociation <i>See</i> Heat of formation
<b>Gray cast iron</b> <i>See</i> Gray iron		Heat of formation Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision. Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.
<b>Gray iron</b> <i>See also</i> Nodular iron		A Method to Estimate Free Energies of Formation of Mineral Sulfides.
<b>Gray iron, Casting</b> Modeling Stress Development During the Solidification of Gray Iron Castings.	489-497A	Gibbs Energies of Formation of Intermetallic Phases in the Systems Pt—Mg, Pt—Ca, and Pt—Ba and Some Applications.
Heat Transfer—Solidification Kinetics Modeling of Solidification of Castings.	997-1005A	On the Evaluation of Stability of Rare Earth Oxides as Face Coats for Investment Casting of Titanium.
<b>Gray iron, Directional solidification</b> Influence of Low-Gravity Solidification on Heterogeneous Nucleation in Stable Iron—Carbon Alloys.	241-252A	The Standard Gibbs Energy of Formation of CeF <sub>3</sub> and Its Activity Coefficient in Cryolite.
<b>Greasing</b> <i>See</i> Lubrication		Discussion of "Thermodynamics of Ca—CaF <sub>2</sub> and Ca—CaCl <sub>2</sub> Systems for the Dephosphorization of Steel".
<b>Grey iron</b> <i>See</i> Gray iron		Discussion of "On the Free Energy of Formation of TiC and Al <sub>2</sub> Cr <sub>3</sub> ".
<b>Grinding (commutation)</b> <i>See</i> Ball milling		Thermodynamic Evaluation of the Cr—Ni—C System.
<b>Growth</b> <i>See</i> Crystal growth Grain growth		<b>Heat resistant alloys</b> <i>See also</i> Superalloys
<b>Guinier Preston zone</b> Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A	<b>Heat resistant alloys, Coating</b>
<b>Hafnium, Powder technology</b> Nanocrystalline Metals Prepared by High-Energy Ball Milling.	2333-2337A	Interface Stability in the Ni—Cr—Al System. I. Morphological Stability of $\beta$ — $\gamma$ Diffusion Couple Interfaces at 1150°C.
<b>Halides</b> <i>See</i> Chlorides		Interface Stability in the Ni—Cr—Al System. II. Morphological Stability of $\beta$ -Ni50Al vs. $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.
<b>Hall Héroult process</b> Measurements of Magnetic Fields and Electromagnetically Driven Melt Flow in a Physical Model of a Hall—Héroult Cell.	59-69B	<b>Heat transfer</b>
Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision. The Standard Gibbs Energy of Formation of CeF <sub>3</sub> and Its Activity Coefficient in Cryolite.	285-294B	Coarsening in Binary Solid—Liquid Mixtures.
<b>Halogenation</b> <i>See</i> Chlorination	861-865B	On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.
<b>Hardenability</b> The Boron Hardenability Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels.	1697-1708A	Mathematical Modeling of Microsegregation in Binary Metallic Alloys.
<b>Hardenability, Alloying effects</b> Effect of Boron on the Microstructure and Tensile Properties of Dual-Phase Steel.	2547-2553A	Stress Distributions and Material Response in Thermal Spraying of Metallic and Ceramic Deposits.
<b>Hardening</b> <i>See</i> Surface hardening		Modeling of Materials Synthesis in Hybrid Plasma Reactors: Production of Silicon by Thermal Decomposition of SiCl <sub>4</sub> .
<b>Hardness</b> <i>See also</i> Microhardness		Modeling of Interfacial Phenomena in Welding.
Microstructure, Deformation, and Fracture Characteristics of an Al <sub>6</sub> Pd <sub>3</sub> Ti <sub>2</sub> Intermetallic Alloy.	145-151A	Observation of an Adiabatic Shear Band in AISI 4340 Steel by High-Voltage Transmission Electron Microscopy.
The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys.	744-748A	Finite-Difference Heat-Transfer Modeling for Continuous Casting.
A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.	1571-1578A	Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.
Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferritic Steel.	2021-2036A	Mathematical Modeling of Sulfide Flash Smelting Process. II. Quantitative Analysis of Radiative Heat Transfer.
<b>Hardness, Cooling effects</b> Effect of Cooling Rate on Hardness of FeAl and NiAl.	2281-2282A	Heat Transfer—Solidification Kinetics Modeling of Solidification of Castings.
<b>Hardness, Heating effects</b> Modulated Structure and Magnetic Properties of Age-Hardenable Fe—Mn—Al—C Alloys.	5-11A	A New Technique for Three-Dimensional Transient Heat Transfer Computations of Autogenous Arc Welding.
Tempering of Steel During Laser Treatment.	987-995A	A Mathematical Model for Metal Flow and Heat Transfer in Centrifuge Melt Spinning.
<b>HAZ</b> <i>See</i> Heat affected zone		Applicability of Potential Flow Assumption for Bubbles in Copper-Making Condition.
<b>Hazelett process</b> <i>See</i> Continuous casting		The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.
<b>Heat affected zone, Mechanical properties</b> Structure—Property Relationships in Bainitic Steels.	1527-1540A	Infiltration of Fiber Preforms by a Binary Alloy. I. Theory.
Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.	2585-2596A	A Study of the Thermotransport Behavior of Cobalt in Thorium.
Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2050 Aluminum Alloy.	2795-2804A	
<b>Heat affected zone, Microstructure</b> Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb: Applications to Fusion Welding.	1273-1286A	<b>Heat transmission</b>
Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferritic Steel.	2021-2036A	Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys.
<b>Heat capacity</b> <i>See</i> Specific heat		Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys".
<b>Heat checking</b> <i>See</i> Thermal fatigue		Three-Dimensional Transport Phenomena in Chemical Vapor Deposition Equipment: a Comparison of Theoretical Predictions With Measurements and Some Concepts Regarding Equipment Design.
<b>Heat dissipation</b> <i>See</i> Cooling		<b>Heat treatment</b>
<b>Heat flow</b> <i>See</i> Heat transmission		<i>See</i> Annealing
		Austenitizing
		Normalizing (heat treatment)
		Quenching (cooling)
		Solution heat treatment
		Tempering
		<b>Heating</b>
		<i>See</i> Roasting
		<b>Heats (energies)</b>
		<i>See</i> Heat of formation
		<b>Heavy metal alloys</b>
		<i>See</i> Tin base alloys
		<b>Heavy metals</b>
		<i>See</i> Antimony
		Bismuth
		Lead (metal)
		Tin
		<b>Heliarc welding</b>
		<i>See</i> Gas tungsten arc welding
		<b>Helmholz free energy</b>
		<i>See</i> Free energy
		<b>HERF</b>
		<i>See</i> High energy rate forming

## Heterogeneous structure

### Heterogeneous structure

The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.

859-875A

Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades.

3115-3125A

### Heterogeneous structure, Field effects

Influence of Low-Gravity Solidification on Heterogeneous Nucleation in Stable Iron—Carbon Alloys.

241-252A

### Hot pressing

*See also* Hot isostatic pressing

Reaction Zone Microstructure in a Ti<sub>3</sub>Al + Nb/SiC Composite.

1559-1569A

### Hexagonal close packed lattice

*See* Hexagonal lattice

### Hexagonal lattice

Evidence for HCP Needlelike Martensite in a Duplex Fe—Mn—Al—C Alloy.

2815-2817A

### Hot reduction

*See* Hot working

### Hot rolling

Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.

2555-2563A

### Hot smelt process

*See* Direct reduction

### High alloy steels

*See also* Maraging steels

Stainless steels

### High alloy steels, Microstructure

Effect of Silicon Addition on the Microstructure of an Fe—8.0Al—29.0Mn—0.90C Alloy.

1891-1899A

### Hot tensile strength

*See* Tensile strength

### High carbon steels, Corrosion

Effect of Pearlite Morphology on Hydrogen Permeation, Diffusion, and Solubility in Carbon Steels.

3257-3258A

### Hot working

*See also* Hot extrusion

Hot rolling

Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.

1969-1987A

### High energy milling

*See* Mechanical alloying

### High energy rate forming

Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.

1969-1987A

### Hydrochloric acid leaching

Kinetics of Galena Leaching in Hydrochloric Acid—Chloride Solutions.

11-17B

### High speed tool steels, Heat treatment

Studies of Carbides in a Rapidly Solidified High-Speed Steel.

3021-3026A

### Hydrodynamics

*See* Magnetohydrodynamics

### High speed tool steels, Microstructure

Dendrite Arm Climbs by Temperature Gradient Zone Melting During Solidification of a High-Speed Tool Steel.

264-266A

### Hydrogen

*See also* Deuterium

### High strength low alloy steels

Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to  $I = 12$  and Their Use for the On-Line Prediction of  $r$ -Value.

697-706A

### Hydrogen diffusion

Hydrogen Diffusion in Al—Li Alloys.

649-655B

### High strength low alloy steels, Rolling

Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.

331-343A

### Hydrogen sorption

Determination of Hydrogen Absorption and Desorption Processes in Aluminum Melts by Continuous Hydrogen Activity Measurements.

855-860B

### High strength low alloy steels, Phase transformations

Continuous Cooling Transformations and Microstructures in a Low-Carbon, High-Strength Low-Alloy Plate Steel.

1493-1507A

### Hydrogen embrittlement

Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Based Superalloys.

365-372A

Hydrogen-Assisted Ductile Fracture in Spheroidized 1520 Steel. I. Axisymmetric Tension.

465-477A

Hydrogen Permeation in Stationary Arc-Melted Nickel 200.

579-587B

The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials.

603-608A

Rolling Contact Fatigue and Fatigue Crack Propagation in 1C—1.5Cr Bearing Steel in the Bainite Condition.

889-893A

Phase Transitions in Rapidly Solidified Stainless Steels Cathodically Hydrogen Charged.

1251-1259A

A Mechanism for Hydrogen-Induced Intergranular Stress Corrosion Cracking in Alloy 600.

1261-1271A

Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.

1287-1298A

The Effects of Cathodic Charging on the Acoustic Emission Generated by Intergranular Cracking in Sensitized 304 Stainless Steel.

1933-1939A

Deuterium Surface Segregation in Titanium Alloys.

2003-2007A

Effect of Threshold Stress Intensity on Fracture Mode Transitions for Hydrogen-Assisted Cracking in AISI 4340 Steel.

2577-2583A

Effects of Crack Tip Stress States and Hydride-Matrix Interaction Stresses on Delayed Hydride Cracking.

2905-2917A

### High temperature alloys

*See* Heat resistant alloys

### HIP

*See* Hot isostatic pressing

### Homogenizing

Microstructure, Deformation, and Fracture Characteristics of an Al<sub>5</sub>Pd<sub>3</sub>Ti<sub>2</sub> Intermetallic Alloy.

145-151A

### Hydrogen embrittlement, Heating effects

Role of Heat Treatment and Cathodic Charging Conditions on the Hydrogen Embrittlement of HP 7075 Aluminum Alloy.

455-464A

Dissolution and Melting of Secondary Al<sub>2</sub>Cu Phase Particles in an AlCu Alloy.

1689-1695A

### Hydrogen embrittlement, Microstructural effects

Effect of Pearlite Morphology on Hydrogen Permeation, Diffusion, and Solubility in Carbon Steels.

3257-3258A

### Hot compression

*See* Hot pressing

### Hot cracking

*See* Cracking (fracturing)

### Hot cracking (welds)

*See* Weld defects

### Hot deformation

*See* Deformation

### Hot dip coating

*See* Hot dip galvanizing

### Hot dip galvanizing

Spangle Formation in Galvanized Sheet Steel Coatings.

549-558B

### Hydrolytic resistance

*See* Corrosion resistance

### Hot ductility

*See* Ductility

### Hot extraction

*See* Extraction

### Hot extrusion

Preferred Orientations in Extruded Nickel and Iron Aluminides.

279-288A

Experimental Assessment of Structure and Property Predictions During Hot Working.

429-438B

### Hot fractures

*See* Fractures

### Hot hardness

*See* Hardness

### Hot isostatic pressing

The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire.

3101-3114A

Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.

On the Analysis of Delamination Fractures in High-Strength Steels.

5-9B

A Rotating Disk Study of Silver Dissolution With Thiourea in the Presence of Ferric Sulfate.

419-427B

The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.

429-438B

Competitive Solvation and Complexation of Cu(II), Cu(II), Pb(II), Zn(II), and Ag(I) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide Solutions Containing Chloride Ion With Applications to Hydrometallurgy.

439-448B

Determination of the Association Constant of Sulfuric Acid.

689-695B

Solubility of Uranous Sulfate in Aqueous Sulfuric Acid Solution.

839-844B

### Hydrostatic pressure

On the Analysis of Delamination Fractures in High-Strength Steels.

2585-2575A

### Hypercubicoid structures

Transformation of Lower Bainite in Hypercubicoid Steels.

845-851A

Ledges and Carbides in Lower Bainite in a Hypercubicoid Steel.

2637-2641A

### Hysteresis

Influence of Test Parameters on the Thermal—Mechanical Fatigue Behavior of a Superalloy.

389-399A

<b>The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels.</b>	653-665A	
<b>IV characteristics</b> See Current voltage characteristics		
<b>Icosahedral phase, Heating effects</b> Phase Formation in Electrodeposited and Thermally Annealed Al—Mn Alloys.	2869-2879A	
<b>Identification</b> A Mossbauer Study of Zinc—Iron Intermediate Phases and Electrodeposited Coatings.	273-277A	
<b>Ilmenite, Reactions (chemical)</b> The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. I. Intrinsic Kinetics.	321-330B	
The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. II. Mathematical Modeling of the Fluidized-Bed Process.	331-340B	
<b>Image analysis</b> Image Analysis for Grain Shape Characterization in Lamp Filaments.	2209-2214A	
<b>Immersion testing (ultrasonic)</b> See Ultrasonic testing		
<b>Impact strength</b> Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallic.	3027-3028A	
Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	3063-3074A	
<b>Impact tests</b> Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. II. Micromechanism of Fracture.	321-330A	
Through-Thickness Fracture of a Ti—V—N Plate Steel.	1177-1191A	
<b>Impact toughness</b> See Impact strength		
<b>Impermeability</b> See Permeability		
<b>Impurities</b> See also Substitutional impurities		
Effect of Impurity Content on Cavitation in the Superplastic Zn—22Al Alloy.	2605-2608A	
<b>Impurities, Diffusion</b> On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A	
<b>Incineration</b> See Combustion		
<b>Inclusions</b> See also Nonmetallic inclusions		
Through-Thickness Fracture of a Ti—V—N Plate Steel.	1177-1191A	
<b>Inconel</b> See Nickel base alloys Superalloys		
<b>Induction (magnetic)</b> See Magnetic induction		
<b>Induction melting</b> See Vacuum induction melting		
<b>Inelasticity</b> See Elasticity		
<b>Infiltration</b> The Infiltration of Aluminum into Silicon Carbide Compacts.	475-485B	
The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	1745-1751A	
Infiltration of Fiber Preforms by a Binary Alloy. I. Theory.	2059-2072A	
Infiltration of Fibrous Preforms by a Pure Metal. III. Capillary Phenomena.	2257-2263A	
Corrigenda and Comments on the Infiltration of Fiber Preforms.	2287A	
<b>Ingot casting</b> See Direct chill casting		
<b>Ingots, Microstructure</b> Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.	557-565A	
Development of Orientation Coherence in Plane-Strain Deformation.	2223-2236A	
Characterization of the Morphological and Lattice Orientational Microstructure of As-Cast Aluminum Ingot.	2265-2275A	
<b>Initiation</b> See Crack initiation		
<b>Injection</b> Plume Characteristics and Liquid Circulation in Gas Injection Through a Porous Plug.	637-648B	
Stopping Resulting From Gas Injection in a Peirce—Smith Converter: the Period of the Standing Wave.	657-664B	
A Study on Measurement of Gas/Liquid Interfacial Area in a Dispersed Gas Injection System.	665-675B	
Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B	
Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	925-928B	
Removal of Antimony From Copper by Injection of Soda Ash. Stopping Resulting From Gas Injection in a Peirce—Smith Converter: Water Modeling.	967-975B	
The Breakup of Bubbles Into Jets During Submerged Gas injection.	987-996B	
997-1003B		
<b>Injection casting</b> See Die casting		
<b>Injection molding</b> Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.		2531-2538A
<b>Inoculation</b> Influence of Low-Gravity Solidification on Heterogeneous Nucleation in Stable Iron—Carbon Alloys.		241-252A
<b>Inorganic acids</b> See Nitric acid		
<b>Inorganic compounds</b> See Ceramics		
<b>Inorganic salts</b> See Fused salts		
<b>Instability</b> See Stability		
<b>Integrated circuits</b> Twin Boundaries in C54—TiSi <sub>2</sub> .		2317-2322A
Interface Characterization of Epitaxial Silver Films on Si(100) and Si(111) Grown by Molecular Beam Epitaxy.		2323-2332A
The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.		2449-2458A
<b>Intensity</b> See Stress intensity		
<b>Interface reactions</b> Interaction of Al <sub>2</sub> O <sub>3</sub> —ZrO <sub>2</sub> Fibers With a Ti—Al Matrix During Pressure Casting.		213-219A
The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.		231-239A
Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.		441-446A
Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.		529-538A
Reaction Zone Microstructure in a Ti <sub>3</sub> Al + Nb/SiC Composite.		1559-1569A
A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.		1571-1578A
The Effect of Matrix Reinforcement Reaction on Fracture in Ti—6Al—4V-Base Composites.		1579-1587A
Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.		1589-1593A
Diffusion of Sputtered Nickel 617 Coatings in Titanium.		1613-1625A
Microscopic Examination of the Interface Region in 6061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.		2489-2496A
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.		2747-2757A
High-Temperature Interactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.		2829-2837A
<b>Interfaces</b> Hydrogen Permeation in Stationary Arc-Melted Nickel 200.		579-587B
Modeling of Interfacial Phenomena in Welding.		600-603B
Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.		673-682A
Coupled Diffusional/Displacive Transformations. II. Solute Trapping.		805-809A
On Bainite Formation.		811-816A
The Distribution of Substitutional Alloying Elements During the Bainite Transformation.		837-844A
Influences of Matrix Ductility, Interfacial Bonding Strength, and Fiber Volume Fraction on Tensile Strength of Unidirectional Metal Matrix Composite.		971-977A
Interface Migration During Recrystallization: the Role of Recovery and Stored Energy Gradients.		1143-1149A
The Development of Solidification Microstructures in the Presence of Lateral Constraints.		1299-1310A
Effects of Interfacial Strength on Fatigue Crack Growth in a Fiber-Reinforced Titanium-Alloy Composite.		1603-1612A
Interface Stability in the Ni—Cr—Al System. I. Morphological Stability of $\beta$ — $\gamma$ Diffusion Couple Interfaces at 1150°C.		1901-1910A
Interface Stability in the Ni—Cr—Al System. II. Morphological Stability of $\beta$ -Ni50Al vs. $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.		1911-1919A
Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.		2073-2082A
Low-Energy Interfaces in NiO—ZrO <sub>2</sub> (CaO) Eutectic.		2309-2315A
Crystallographic and Mechanistic Aspects of Growth by Shear and by Diffusional Processes.		2369-2409A
Microstructure of a Pressure-Cast Fe <sub>2</sub> Al Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.		2881-2889A
<b>Interfaces, Atomic properties</b> Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy.		1655-1662A
Atomic Structure and Energy of $\Sigma = 5$ Tilt Boundaries in Gold.		2299-2307A
<b>Interfaces, Mechanical properties</b> Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.		529-538A
The Fracture Energy of Bimaterial Interfaces.		2419-2429A
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.		2747-2757A
<b>Interfaces, Microstructure</b> Simple Geometry and Crystallography Applied to Ferrous Bainites.		799-803A
Interface Characterization of Epitaxial Silver Films on Si(100) and Si(111) Grown by Molecular Beam Epitaxy.		2323-2332A

## Interfaces

Microscopic Examination of the Interface Region in 6061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.	2489-2495A	Intermetallics, Directional solidification Directional Solidification and Heat Treatment of Terfenol-D Magnetostrictive Materials.	2249-2255A
<b>Interfacial energy</b> See Surface energy		<b>Intermetallics, Irradiation</b> Amorphization in $Zr_3Al$ Irradiated With 1 MeV $e^-$ and $Kr^+$ . Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.	1799-1808A
<b>Interfacial surface tension</b> See Surface tension		Sm—Co Permanent Magnets: Effects of Fast Neutron Irradiation.	1809-1815A
<b>Intergranular corrosion</b> A Mechanism for Hydrogen-Induced Intergranular Stress Corrosion Cracking in Alloy 600.	1261-1271A	<b>Intermetallics, Mechanical properties</b> The Flow and Fracture of a $Ti_3Al$ —Nb Alloy. Microstructure, Deformation, and Fracture Characteristics of an $Al_{63}Pd_{13}Ti_{25}$ Intermetallic Alloy. Structure, Tensile Deformation, and Fracture of a $Ti_3Al$ —Nb Alloy. Creep Behavior of $Ti$ —25Al—10Nb—3V—1Mo. Mechanical Properties of High-Temperature Titanium Intermetallic Compounds. Effect of Cooling Rate on Hardness of FeAl and NiAl. Intergranular Fracture by Slip/Grain Boundary Interaction. Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals. Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy. Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds. Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a NiAl-Based Alloy. Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallics. Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	135-143A 145-151A 609-625A 641-651A 1951-1957A 2281-2282A 2431-2436A 2521-2530A 2687-2699A 2709-2715A 2967-2976A 3027-3028A 3063-3074A
<b>Intergranular corrosion, Environmental effects</b> Gas Phase Embrittlement of Nickel by Sulfur.	3049-3061A	<b>Intermetallics, Microstructure</b> Deformation Structure in a $Ti$ —24Al—11Nb Alloy. Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.	627-639A 959-970A
<b>Intergranular fracture</b> The Effects of Cathodic Charging on the Acoustic Emission Generated by Intergranular Cracking in Sensitized 304 Stainless Steel.	1933-1939A	<b>Intermetallics, Phases (state of matter)</b> Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.	2897-2903A
On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A	<b>Intermetallics, Powder technology</b> The Combustion Synthesis of Copper Aluminides.	567-577B
Intergranular Fracture by Slip/Grain Boundary Interaction. Effect of Threshold Stress Intensity on Fracture Mode Transitions for Hydrogen-Assisted Cracking in AISI 4340 Steel. Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.	2431-2436A	<b>Intermetallics, Welding</b> Effect of Thermal Processing on the Microstructure of $Ti$ —26Al—11Nb: Applications to Fusion Welding.	1273-1286A
Intergranular fracture, Corrosion effects Role of Heat Treatment and Cathodic Charging Conditions on the Hydrogen Embrittlement of HP 7075 Aluminum Alloy.	455-464A	<b>Internal combustion engines</b> See Gas turbine engines	
<b>Intergranular precipitation</b> Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A	<b>Internal friction</b> On Bainite Formation.	811-816A
<b>Intergranular precipitation, Alloying effects</b> Effect of Silicon Addition on the Microstructure of an Fe—8.0Al—2.9Mn—0.9C Alloy.	1891-1899A	<b>Internal stress</b> See Residual stress	
<b>Interlayers, Mechanical properties</b> Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.	3085-3100A	<b>Investment casting</b> On the Evaluation of Stability of Rare Earth Oxides as Face Coats for Investment Casting of Titanium.	559-566B
<b>Intermetallics</b> A Mössbauer Study of Zinc—Iron Intermediate Phases and Electrodeposited Coatings.	273-277A	<b>Investment molding</b> See Investment casting	
<b>Intermetallic compounds</b> See Intermetallics		<b>Ion implantation</b> Plasma Source Nitrogen Ion Implantation of $Ti$ —Al—4V. Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.	1663-1667A 1809-1815A
<b>Intermetallic phases</b> Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces. Phase Relationships in the Al—Ta System. Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems. Diffusion of Sputtered Inconel 617 Coatings in Titanium. The Structure of the High-Temperature Phase $MnAl(h)$ and the Displacive Transformation From $MnAl(h)$ Into $Mn_2Al_3$ . Thermal Expansion and Elastic Properties of High Gold—Tin Alloys. Phase Relationships in the Neodymium—Magnesium Alloy System. Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.	529-538A 539-545A 1311-1318A 1613-1625A 1669-1672A 1885-1899A 2109-2114A 2897-2903A	Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.	2585-2596A
<b>Intermetallic phases, Cooling effects</b> Extended Al(Mn) Solution in a Rapidly Solidified Al—Li—Mn—Zr Alloy.	1785-1789A	<b>Iridium compounds, Mechanical properties</b> Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	3063-3074A
<b>Intermetallics</b> See also A15 compounds	107-115A	<b>Iron</b> See also Sponge iron	
Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped $Ni_7Al_19Ti_5$ Single Crystals.		<b>Iron, Binary systems</b> Application of the Quasi-Subregular Solution Model: the Iron—Carbon System.	447-453A
<b>Intermetallics, Atomic properties</b> Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy.	1655-1662A	<b>Iron, Casting</b> On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.	279-283B
<b>Intermetallics, Coating</b> The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A	<b>Iron, Crystal growth</b> Interface Migration During Recrystallization: the Role of Recovery and Stored Energy Gradients.	1143-1149A
<b>Intermetallics, Coatings</b> Interface Stability in the Ni—Cr—Al System. I. Morphological Stability of $\beta$ —Diffusion Couple Interfaces at 1150°C. Interface Stability in the Ni—Cr—Al System. II. Morphological Stability of $\beta$ -Ni50Al vs. $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.	1901-1910A	<b>Iron, Extraction</b> The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B
<b>Intermetallics, Composite materials</b> Interaction of $Al_2O_3$ — $ZrO_2$ Fibers With a Ti—Al Matrix During Pressure Casting. Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices. Reaction Zone Microstructure in a $Ti_3Al$ + Nb/SiC Composite. Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC. Thermal Fatigue of $Ti$ —24Al—11Nb/SCS-6. High-Temperature Slow-Strain-Rate Compression Studies on CoAl—TiB <sub>2</sub> Composites. Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.	213-219A 441-446A 1559-1569A 1589-1593A 1595-1602A 2179-2188A 2701-2707A	<b>Iron, Heat treatment</b> Development and Relaxation of Stress in Surface Layers: Composition and Residual Stress Profiles in $\gamma$ - $Fe_4N_{1-x}$ Layers on $\alpha$ -Iron Substrates. Phase Transformations and Stress Relaxation in $\gamma$ - $Fe_4N_{1-x}$ Surface Layers During Oxidation.	189-204A 901-912A
<b>Intermetallics, Crystal lattices</b> Preferred Orientations in Extruded Nickel and Iron Aluminides.	279-288A	<b>Iron, Mechanical properties</b> Estimation of the Yield Strength of Metals From Crystal Defect Energies.	1719-1723A
<b>Intermetallics, Diffusion</b> On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A	<b>Iron, Microstructure</b> Dislocation Structures Ahead of Advancing Cracks.	2411-2417A
		<b>Iron, Powder technology</b> The Physics of Mechanical Alloying: a First Report. Nanocrystalline Metals Prepared by High-Energy Ball Milling. Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.	289-303A 2333-2337A 2531-2538A

<b>Iron, Rolling</b>					
Stereoscopic Presentation of Rodrigues Vector Representation of the Full Three-Dimensional Disorientation of Iron Crystals by Rolling.	253-255A				
<b>Iron, Surface finishing</b>					
Positron Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing.	2037-2045A				
<b>Iron, Ternary systems</b>					
A Reassessment of the Cr—Fe—Ni System.	1673-1680A				
A Thermodynamic Assessment of the Fe—Mn—C System.	2115-2123A				
A Thermodynamic Evaluation of the Cr—Fe—N System.	2477-2488A				
An Assessment of the Ca—Fe—O System.	2759-2776A				
<b>Iron and steel making</b>					
See also Ironmaking Steel making	511-519B				
Deuterium Exchange Studies of the Interfacial Rate of Reaction of Water Vapor With Silica-Saturated Iron Silicate Melts.					
<b>Iron base alloys</b>					
See Ferrous alloys	441-446A				
<b>Iron compounds, Composite materials</b>					
Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	2881-2889A				
Microstructure of a Pressure-Cast FeAl Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.					
<b>Iron compounds, Crystal lattices</b>					
Preferred Orientations in Extruded Nickel and Iron Aluminides.	279-288A				
<b>Iron compounds, Directional solidification</b>					
Directional Solidification and Heat Treatment of Terfenol-D Magnetostrictive Materials.	2249-2255A				
<b>Iron compounds, Mechanical properties</b>					
Effect of Cooling Rate on Hardness of FeAl and NiAl.	2281-2282A				
Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallics.	3027-3028A				
<b>Iron ores</b>					
See also Magnetite	827-837B				
<b>Iron ores, Beneficiation</b>					
Mathematical Modeling of Exothermic Leaching Reaction System: Pressure Oxidation of Wide Size Arsenopyrite Particles.					
<b>Iron oxides</b>					
See Magnetite Wustite	37-47B				
<b>Iron powder</b>					
See Iron	135-139B				
<b>Ironmaking</b>					
Study of Moisture Transfer During the Strand Sintering Process.	141-151B				
Reduction of Solid Wustite in $H_2/H_2O/CO/CO_2$ Gas Mixtures. In Situ Observations of the Gaseous Reduction of Magnetite. Microstructural Changes Occurring During the Gaseous Reduction of Magnetite.	153-172B				
Equilibrium Between Cerium or Neodymium and Oxygen in Molten Iron.	295-302B				
Characterization of Bonding and Crystalline Phases in Fluxed Pellets Using Peat Moss and Bentonite as Binders.	463-474B				
In Situ Measurement of Effective Gas Diffusivity Through Hematite Pellets During Stepwise Reductions.	677-687B				
Mechanisms of Porous Iron Growth on Wustite and Magnetite During Gaseous Reduction.	733-741B				
The Effects of Impurity Elements on the Reduction of Wustite and Magnetite to Iron in $CO/CO_2$ and $H_2/H_2O$ Gas Mixtures. Blast Furnace On-Line Simulation Model.	743-751B				
<b>Irradiation</b>					
Effect of Oxygen on Vacancy Cluster Morphology in Metals.	913-923B				
<b>Irradiation damage</b>					
See Radiation damage	1037-1051A				
<b>Isomer shift</b>					
See Mossbauer spectroscopy	137-141B				
<b>Isostatic pressing</b>					
See Hot isostatic pressing	141-151B				
<b>Isothermal treatment</b>					
See Austempering	153-172B				
<b>IV characteristics</b>					
See Current voltage characteristics	295-302B				
<b>Izod impact tests</b>					
See Impact tests	463-474B				
<b>Jet engines</b>					
See Gas turbine engines	677-687B				
<b>Joining</b>					
See Welding	733-741B				
<b>Joists</b>					
See Welded joints	743-751B				
<b>Jungnau Rossi casting</b>					
See Continuous casting	913-923B				
<b>Kaldo process</b>					
See Oxygen steel making	1037-1051A				
<b>Killed steels</b>					
See Aluminum killed steels	1121-1131A				
<b>Kilns</b>					
Residence Time Distribution and Material Flow Studies in a Rotary Kiln.	2149-2154A				
<b>Kinetics</b>					
See also Reaction kinetics Kinetics of Galena Leaching in Hydrochloric Acid—Chloride Solutions.	231-239A				
Theoretical Interpretation of the Decarburization Mechanism in Convective Oxygen Steelmaking.	238-240A				
The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.	241-243A				
Kinetics of the Dissolution of Zinc Sulfide in an Oxidizing Slag.	244-246A				
Heat Transfer-Solidification Kinetics Modeling of Solidification of Castings.	247-249A				
Interface Migration During Recrystallization: the Role of Recovery and Stored Energy Gradients.	250-252A				
Growth and Overall Transformation Kinetics Above the Bay Temperature in Fe—C—Mo Alloys.	253-255A				
An Investigation of the Generality of Incomplete Transformation to Bainite in Fe—C—X Alloys.	256-258A				
The Kinetics of the Isothermal Martensitic $\beta \rightarrow \alpha$ Transformation in U(Ga) Alloys.	259-261A				
Kinetics of Heterogeneous in Al—Zn—Mg—(Cu) Alloys.	262-264A				
Cavity Microstructure and Kinetics During Gas Tungsten Arc Welding of Helium-Containing Stainless Steel.	265-267A				
<b>Kinetics, Composition effects</b>					
Composition Dependence of Aging Kinetics in Some Cu—Zn—Al Shape Memory Alloys.	268-269A				
<b>Kold casting</b>					
See Investment casting	270-271A				
<b>Krupp Renn process</b>					
See Direct reduction	272-273A				
<b>Ladle metallurgy</b>					
A Study on the Mathematical Modeling of Turbulent Recirculating Flows in Gas-Stirred Ladles.	274-276A				
Plume Characteristics and Liquid Circulation in Gas Injection Through a Porous Plug.	277-279A				
A Study on Measurement of Gas/Liquid Interfacial Area in a Dispersed Gas Injection System.	280-282A				
Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	283-285A				
<b>Lamina</b>					
See Laminates	286-287A				
<b>Laminates</b>					
See also Bimetals	288-289A				
<b>Laminates, Mechanical properties</b>					
Fracture Behavior of Laminated Metal—Metallic Glass Composites.	290-291A				
Creep Behavior of Nickel—Copper Laminate Composites With Controlled Composition Gradients.	292-293A				
<b>Laser beam annealing</b>					
Tempering of Steel During Laser Treatment.	294-295A				
<b>Laser beam welding</b>					
Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb: Applications to Fusion Welding.	296-297A				
<b>Laser processing</b>					
See Laser beam annealing Laser beam welding	298-299A				
<b>Laser welding</b>					
See Laser beam welding	300-301A				
<b>Lattice constant</b>					
See Lattice parameters	302-303A				
<b>Lattice defects</b>					
See Crystal defects	304-305A				
<b>Lattice parameters</b>					
Lattice Changes of Iron—Nitrogen Martensite on Aging at Room Temperature.	306-307A				
Microstructure of a Pressure-Cast FeAl Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.	308-309A				
<b>Lattice parameters, Deformation effects</b>					
Lattice Imperfections Studied by X-Ray Diffraction in Deformed Aluminum-Based Alloys: Al—Ge Alloy.	310-311A				
<b>Lattice vacancies</b>					
Effect of Oxygen on Vacancy Cluster Morphology in Metals. Positron Spectroscopy for Materials Characterization.	312-313A				
<b>Laves phase</b>					
Mechanical Properties of Ti—Cr—Nb Alloys and Prospects for High-Temperature Applications.	314-315A				
<b>Layers</b>					
See Interlayers Surface layer	316-317A				
<b>Leaching</b>					
Metallic Solvent Extraction of Manganese and Titanium From Ferrosilicons.	318-319A				
<sup>197</sup> Au Mossbauer Study of the Gold Species Adsorbed on Carbon From Cyanide Solutions.	320-321A				
Oxidative Ammonia Leaching of Pure Zinc Sulfide in the Presence of Lead Compounds.	322-323A				
Oxidative Leaching of an Offgrade/Complex Copper Concentrate in Chloride Lixivians.	324-325A				
Mathematical Modeling of Exothermic Leaching Reaction System: Pressure Oxidation of Wide Size Arsenopyrite Particles.	326-327A				

## Leaching

The Effect of the Elemental Sulfur Reaction Product on the Leaching of Galena in Ferric Chloride Media.	935-943B	Low carbon steels, Heat treatment Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon (~ 0.20 wt.%) Steels.	3153-3164A
<b>Lead (metal), Extraction</b>		<b>Low carbon steels, Microstructure</b> Structure of Continuously Cooled Low-Carbon Vanadium Steels.	2839-2855A
Competitive Solvation and Complexation of Cu(I), Cu(II), Pb(II), Zn(II), and Ag(I) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide Solutions Containing Chloride Ion With Applications to Hydrometallurgy.	439-448B	Development of Ferrite Rolling Textures in Low- and Extra Low-Carbon Steels.	2985-3000A
Viscosities and Activities in Lead-Smelting Slags.	501-510B		
Oxidative Leaching of an Offgrade/Complex Copper Concentrate in Chloride Lixiviant.	611-620B	<b>Low cycle fatigue</b> Measurement of Fatigue Accumulation in High-Strength Steels by Microstructural Examination.	1989-1996A
Mathematical Models of Current Losses in Bipolar Cells.	783-790B	Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Base Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A
<b>Lead ores</b>		Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.	3215-3220A
See Galena			
<b>Life</b>			
See Fatigue life			
<b>Light metal alloys</b>			
See Aluminum base alloys			
Magnesium base alloys			
Titanium base alloys			
<b>Light metals</b>			
See Aluminum			
Magnesium			
Titanium			
<b>Lime, Binary systems</b>			
An Assessment of the CaO—SiO <sub>2</sub> System.	303-312B		
<b>Line defects</b>			
See Dislocations			
<b>Liquid metal embrittlement</b>			
Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A		
Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.	2919-2928A		
<b>Liquid metal forging</b>			
See Squeeze casting			
<b>Liquid metals, Electrochemistry</b>			
Detailed Assessment of Partial Thermodynamic Quantities of Tin in Molten Bi—Sn Alloys From Electromotive Force Measurements.	87-96B		
<b>Liquid metals, Environment</b>			
Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.	2919-2928A		
<b>Liquid metals, Reactions (chemical)</b>			
Activity of Boron in Ni—B—C Melts Saturated With Carbon. Dimerization of Boron.	791-793B		
2609A			
<b>Liquid metals, Solubility</b>			
Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys.	59-68A		
Discussion of "Comments on the Solubility of Carbon in Molten Aluminum".	255-257A		
A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.	697-706B		
<b>Liquid metals, Sorption</b>			
Interaction Behavior of Nitrogen in Liquid Niobium.	845-853B		
Determination of Hydrogen Absorption and Desorption Processes in Aluminum Melts by Continuous Hydrogen Activity Measurements.	855-860B		
<b>Liquid phase diffusion</b>			
See Diffusion			
<b>Liquid phase sintering</b>			
The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys.	744-748A		
Matrix Composition Effects on the Tensile Properties of Tungsten—Molybdenum Heavy Alloys.	1325-1327A		
<b>Liquid phases</b>			
A Thermodynamic Evaluation of the Cr—Fe—N System.	2477-2488A		
<b>Liquids</b>			
See Liquid metals			
<b>Liquitoidus</b>			
ChemSage—a Computer Program for the Calculation of Complex Chemical Equilibria.	1013-1023B		
<b>Lithium, Alloying elements</b>			
Hydrogen Diffusion in Al—Li Alloys.	649-655B		
<b>Lithium, Diffusion</b>			
Lithium Diffusion in Aluminum—Lithium Alloy 2090 Clad With 7072.	39-43A		
<b>Live loads</b>			
See Cyclic loads			
<b>Lixivation</b>			
See Leaching			
<b>Loops (dislocation)</b>			
See Dislocation loops			
<b>Loose powder sintering</b>			
Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering.	2935-2941A		
<b>Lost wax investment casting</b>			
See Investment casting			
<b>Lost wax process</b>			
See Investment casting			
<b>Low alloy steels</b>			
See High strength low alloy steels			
<b>Low carbon steels, Casting</b>			
Finite Difference Heat-Transfer Modeling for Continuous Casting.	761-770B		
<b>Manganese, Alloying elements</b>			
Interaction of Al <sub>2</sub> O <sub>3</sub> —ZrO <sub>2</sub> Fibers With a Ti—Al Matrix During Pressure Casting.			213-219A
The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe—C—Ti Alloys.			1509-1515A

## Mathematical models

<b>The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe—C—Si—Mn Alloys.</b>	1517-1525A	Coarsening in Binary Solid—Liquid Mixtures.	27-37A
<b>Manganese, Binary systems</b>		Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.	69-80A
The Structure of the High-Temperature Phase MnAl(h) and the Displacive Transformation From MnAl(h) into Mn <sub>5</sub> Al <sub>8</sub> .	1689-1672A	Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. II. Crack Opening Profile.	81-86A
<b>Manganese, Extraction</b>		Calculations of Forming Limit Diagrams.	87-94A
Metallic Solvent Extraction of Manganese and Titanium From Ferroalloys.	217-228B	On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.	279-283B
<b>Manganese, Solubility</b>		Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A
Extended Al(Mn) Solution in a Rapidly Solidified Al—Li—Mn—Zr Alloy.	1785-1789A	The Breakup of Bubbles into Jets During Submerged Gas Injection.	997-1003B
<b>Manganese, Ternary systems</b>		Residence Time Distribution and Material Flow Studies in a Rotary Kiln.	1005-1011B
A Thermodynamic Assessment of the Fe—Mn—C System.	2115-2123A	Applicability of Potential Flow Assumption for Bubbles in Copper-Making Condition.	1075-1079B
<b>Maraging steels, Structural hardening</b>		A General Method for Estimation of Fracture Surface Roughness. I. Theoretical Aspects.	1193-1199A
Precipitation Reactions and Strengthening Behavior in 18 wt% Nickel Maraging Steels.	2655-2668A	A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	1201-1207A
<b>Maraging steels, Welding</b>		Infiltration of Fiber Preforms by a Binary Alloy. I. Theory.	2059-2072A
Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.	3085-3100A	A Study of the Thermo-transport Behavior of Cobalt in Thoria.	2141-2148A
<b>Martensite</b>		Development of Orientation Coherence in Plane-Strain Deformation.	2223-2236A
Crystal Structure Analysis of $\gamma'$ Cu—Al—Ni Martensite Using Conventional X-Rays and Synchrotron Radiations.	2669-2678A	Dislocation Structures Ahead of Advancing Cracks.	2411-2417A
Correction to "Carbide Precipitation During Stage I Tempering of Fe—Ni—Cr Martensites".	2749-2765A	Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2521-2530A
Evidence for HCP Needelike Martensite in a Duplex Fe—Mn—Al—C Alloy.	2815-2817A	Applications of the Square Root Diffusivity to Diffusion in Ni—Al—Cr Alloys.	2679-2685A
<b>Martensite, Heat treatment</b>		Study of Annealing Twin in FCC Metals and Alloys.	2891-2896A
Discussion of "Spinodal Decomposition During Aging of Fe—Ni—C Martensites" and Structure of the Fe <sub>3</sub> C Carbide.	2083-2086A	Effects of Crack Tip Stress States and Hydride-Matrix Interaction Stresses on Delayed Hydride Cracking.	2905-2917A
<b>Martensitic stainless steels, Corrosion</b>		Development of Ferrite Rolling Textures in Low- and Extra Low-Carbon Steels.	2965-3000A
Fatigue Threshold and Low-Rate Crack Propagation Properties for Structural Steels in 3% Sodium Chloride Aqueous Solution.	2189-2199A	Improving the Calculation of Interdiffusion Coefficients.	3039-3047A
<b>Martensitic stainless steels, Heat treatment</b>		Influence of Deformation-Induced Martensite on Fatigue Crack Propagation in 304-Type Steels.	3137-3152A
The Effect of Tempering and Aging on a Low Activation Martensitic Steel.	1853-1861A	Spray Casting of Strip Steel: Process Analysis.	3237-3256A
<b>Martensitic stainless steels, Irradiation</b>		<b>Mathematical models</b>	
Contributions From Research on Irradiated Ferritic/Martensitic Steels to Materials Science and Engineering.	1065-1071A	Study of Moisture Transfer During the Strand Sintering Process.	37-47B
<b>Martensitic stainless steels, Phase transformations</b>		Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys.	59-68A
An Investigation of the High-Temperature and Solidification Microstructures of PH 13-8 Molybdenum Stainless Steel.	2465-2475A	Conservation of Mass and Momentum for the Flow of Interdendritic Liquid During Solidification.	173-181B
<b>Martensitic transformations</b>		The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	183-190B
Coupled Diffusional/Displacive Transformations. II. Solute Trapping.	805-809A	Fluid Flow in Pachuca (Air-Agitated) Tanks. II. Mathematical Modeling of Flow in Pachuca Tanks.	191-203B
The Kinetics of the Isothermal Martensitic $\beta \rightarrow \alpha$ Transformation in U(Ga) Alloys.	2125-2129A	Modeling of Microsegregation Under Rapid Solidification Conditions.	260-263A
Application of the Double-Shear Theory of Martensite Crys-tallography to the $\beta \rightarrow \alpha$ Transformation in an U(Ga) Alloy.	2131-2136A	A Study on the Mathematical Modeling of Turbulent Recirculating Flows in Gas-Stirred Ladles.	269-277B
<b>Martensitic transformations, Deformation effects</b>		The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. II. Mathematical Modeling of the Fluidized-Bed Process.	331-340B
Influence of Deformation-Induced Martensite on Fatigue Crack Propagation in 304-Type Steels.	3137-3152A	High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy MA 956.	353-364A
<b>Martensitic transformations, Heating effects</b>		Mathematical Modeling of Microsegregation in Binary Metallic Alloys.	357-375B
The Tempering of Iron—Nitrogen Martensite: Dilatometric and Calorimetric Analysis.	13-26A	Stress Distributions and Material Response in Thermal Spraying of Metallic and Ceramic Deposits.	377-385B
<b>Mass transfer</b>		Optimal Control of an Aluminum Casting Furnace. I. The Control Model.	487-494B
Coarsening in Binary Solid—Liquid Mixtures.	27-37A	Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.	495-500B
The Spout of Air Jets Upwardly Injected into a Water Bath.	71-80B	Modeling of Material Synthesis in Hybrid Plasma Reactors: Production of Silicon by Thermal Decomposition of SiCl <sub>4</sub> .	589-598B
Mathematical Modeling of Microsegregation in Binary Metallic Alloys.	357-375B	A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.	697-706B
The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B	Modeling of Feeding Behavior of Solidifying Al—7Si—0.3Mg Alloy Plate Casting.	715-722B
Three-Dimensional Transport Phenomena in Chemical Vapor Deposition Equipment: a Comparison of Theoretical Predictions With Measurements and Some Concepts Regarding Equipment Design.	753-760B	Modeling of Micro—Macrosegregation in Solidification Processes.	749-753A
Interaction Behavior of Nitrogen in Liquid Niobium.	845-853B	Three-Dimensional Transport Phenomena in Chemical Vapor Deposition Equipment: a Comparison of Theoretical Predictions With Measurements and Some Concepts Regarding Equipment Design.	753-760B
Residence Time Distribution and Material Flow Studies in a Rotary Kiln.	1005-1011B	Finite Difference Heat-Transfer Modeling for Continuous Casting.	761-770B
A Mathematical Model for Metal Flow and Heat Transfer in Centrifuge Melt Spinning.	1063-1073B	Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B
Applicability of Potential Flow Assumption for Bubbles in Copper-Making Condition.	1075-1079B	Mathematical Models of Current Losses in Bipolar Cells.	783-790B
A Study of the Thermo-transport Behavior of Cobalt in Thoria.	2141-2148A	Mathematical Modeling of Exothermic Leaching Reaction System: Pressure Oxidation of Wide Size Arsenopyrite Particulates.	827-837B
Atomic Mass Transport of Carbon in Two-Phase Nb—1.0Zr—0.1C Alloy Under a Temperature Gradient.	2929-2934A	Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays.	899-912B
<b>Master alloys</b>		Blas Furnace On-Line Simulation Model.	913-923B
See Ferroalloys		Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	925-928B
<b>Materials</b>		Mathematical Modeling of Sulfide Flash Smelting Process. I. Model Development and Verification With Laboratory and Pilot Plant Measurements for Chalcopyrite Concentrate Smelting.	945-958B
See also Ceramics		Mathematical Modeling of Sulfide Flash Smelting Process. II. Quantitative Analysis of Radiative Heat Transfer.	959-966B
Composite materials		A New Technique for Three-Dimensional Transient Heat Transfer Computations of Autogenous Arc Welding.	1033-1047B
Dissimilar materials		ALSPEN—a Mathematical Model for Thermal Stresses in Direct Chill Casting of Aluminum Billets.	1049-1061B
Refractories		A Mathematical Model for Metal Flow and Heat Transfer in Centrifuge Melt Spinning.	1063-1073B
Advanced Materials and Competitiveness.			
Advanced Materials and Competitiveness.			
<b>Materials handling</b>			
See Feeding			
<b>Materials testing</b>			
See Mechanical tests			
Nondestructive testing			
<b>Mathematical analysis</b>			
See also Numerical analysis			
Statistical analysis			

## Mathematical models

<b>Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems.</b>	1311-1318A	<b>Metal working</b> <i>See</i> Cold working Hot working Thermomechanical treatment
<b>Dissolution and Melting of Secondary <math>Al_2Cu</math> Phase Particles in an <math>Al-Cu</math> Alloy.</b>	1689-1695A	<b>Metallic compounds</b> <i>See</i> Intermetallics
<b>Modeling Dislocation Evolution in Irradiated Alloys.</b>	1829-1837A	<b>Metallic glasses, Composite materials</b> <i>See</i> Fracture Behavior of Laminated Metal—Metallic Glass Composites.
<b>Fracture Behavior of Laminated Metal—Metallic Glass Composites.</b>	2159-2168A	<b>Metallic glasses, Magnetic properties</b> <i>See</i> Fracture Behavior of Laminated Metal—Metallic Glass Composites.
<b>Composite Ferrous Powder Metallurgy Structures: Mechanical Properties and Stress Analysis.</b>	2943-2955A	<b>Metallographic structures</b> <i>See</i> Microstructure
<b>Mathematics</b>		<b>Metallography</b> <i>See</i> Crystallography Image analysis Quantitative metallography
<i>See</i> Finite element method Geometry Mathematical analysis Mathematical models Topology		<b>Metalloid compounds</b> <i>See</i> Germanium compounds Silicon compounds
<b>Mattes</b>		<b>Metalloids</b> <i>See</i> Boron Carbon Germanium Silicon
<i>See</i> Copper mattes		<b>Metalurgical analysis</b> <i>See</i> Identification Quantitative analysis Quantitative metallography
<b>Mechanical alloying</b>		<b>Metalurgical constituents</b> <i>See</i> Laves phase
<i>The Physics of Mechanical Alloying: a First Report.</i>	289-303A	<b>Metallurgy</b> <i>See</i> Physical metallurgy Powder metallurgy
<i>Effects of the Amount of <math>\gamma'</math> and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Based Superalloys.</i>	547-555A	<b>Metals</b> <i>See</i> FCC metals Liquid metals Porous metals
<i>Displacement Reactions During Mechanical Alloying.</i>	2789-2794A	<b>Metastable phases</b> <i>See</i> Decomposition and Dissolution Kinetics of $\delta'$ Precipitation in $Al-Li$ Binary Alloys. Discussion of "On the Free Energy of Formation of $TiC$ and $Al_2O_3$ ".
<b>Mechanical hysteresis</b>		<b>Metastable phases, Deformation effects</b> <i>See</i> The Effect of Deformation-Induced Transformation on the Fracture Toughness of Commercial Titanium Alloys.
<i>See</i> Hysteresis		<b>Metastable phases, Heating effects</b> <i>See</i> Phase Formation of Electrodeposited and Thermally Annealed $Al-Mn$ Alloys.
<b>Mechanical polishing</b>		<b>MHD</b> <i>See</i> Magnetohydrodynamics
<i>Positron Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing.</i>	2037-2045A	<b>Microalloyed steels</b> <i>See</i> High strength low alloy steels
<b>Mechanical properties</b>		<b>Microcracking</b> <i>See</i> Crack initiation
<i>See</i> Bonding strength		<b>Microfractography</b> <i>See</i> Fractography
Creep (materials)		<b>Microhardness</b> <i>See</i> Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.
Ductile brittleness transition		<i>See</i> Mechanical Properties of $Ti-Cr-Nb$ Alloys and Prospects for High-Temperature Applications.
Ductility		<i>See</i> Precipitation Reactions and Strengthening Behavior in 18 wt% Nickel Maraging Steels.
Elastic constants		<i>See</i> Mechanical Properties of Alloys of $IrNb$ and Other High-Temperature Intermetallic Compounds.
Elasticity		
Fatigue (materials)		
Fracture strength		
Hardness		
Impact strength		
Plasticity		
Shear properties		
Strain		
Tensile properties		
Toughness		
Wear		
Wear resistance		
<b>Mechanical tests</b>		
<i>See also</i> Creep tests Tension tests		
<i>Review of Small Specimen Test Techniques for Irradiation Testing.</i>	1105-1119A	<b>Metastable phases, Deformation effects</b> <i>See</i> The Effect of Deformation-Induced Transformation on the Fracture Toughness of Commercial Titanium Alloys.
<i>Mechanical Properties of <math>Ti-Cr-Nb</math> Alloys and Prospects for High-Temperature Applications.</i>	2149-2154A	<b>Metastable phases, Heating effects</b> <i>See</i> Phase Formation of Electrodeposited and Thermally Annealed $Al-Mn$ Alloys.
<b>Mechanical wear</b>		<b>MHD</b> <i>See</i> Magnetohydrodynamics
<i>See</i> Wear		
<b>Mechanics</b>		<b>Microalloyed steels</b> <i>See</i> High strength low alloy steels
<i>See</i> Dynamics Fracture mechanics		
<b>Mechanisms</b>		<b>Microcracking</b> <i>See</i> Crack initiation
<i>See</i> Corrosion mechanisms		
<b>Medium carbon steels, Corrosion</b>		<b>Microfractography</b> <i>See</i> Fractography
<i>Fatigue Threshold and Low-Rate Crack Propagation Properties for Structural Steels in 3% Sodium Chloride Aqueous Solution.</i>	2189-2199A	
<b>Medium carbon steels, Rolling</b>		
<i>Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.</i>	2555-2563A	<b>Microhardness</b> <i>See</i> Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.
<b>Melt spinning</b>		
<i>Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun <math>Al-Fe</math> Alloys.</i>	205-212A	<i>See</i> Mechanical Properties of $Ti-Cr-Nb$ Alloys and Prospects for High-Temperature Applications.
<i>Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun <math>Al-Fe</math> Alloys".</i>	205-212A	<i>See</i> Precipitation Reactions and Strengthening Behavior in 18 wt% Nickel Maraging Steels.
<i>On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.</i>	279-283B	<i>See</i> Mechanical Properties of Alloys of $IrNb$ and Other High-Temperature Intermetallic Compounds.
<i>Microscopy and Tensile Behavior of Melt-Spun <math>Ni-Al-Fe</math> Alloys.</i>	959-970A	
<i>A Mathematical Model for Metal Flow and Heat Transfer in Centrifuge Melt Spinning.</i>	1063-1073B	
<b>Melting</b>		
<i>See</i> Zone melting		
<b>Melting furnaces</b>		
<i>Optimal Control of an Aluminum Casting Furnace. I. The Control Model.</i>	487-494B	<b>Microhardness, Deformation effects</b> <i>See</i> Experimental Assessment of Structure and Property Predictions During Hot Working.
<i>Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.</i>	495-500B	
<b>Mercury compounds, Synthesis</b>		
<i>Study of Chloridizing Volatilization Roasting of Cinnabar as a Basis for a Process to Obtain Mercuric and Mercurous Chlorides.</i>	259-268B	<b>Microhardness, Heating effects</b> <i>See</i> The Effect of Tempering and Aging on a Low Activation Martensitic Steel.
<b>Metal carbides</b>		
<i>See</i> Titanium carbide		
<b>Metal inert gas welding</b>		
<i>See</i> Gas metal arc welding		
<b>Metal powders</b>		
<i>See</i> Carbonyl powders		
		<b>Microstructure</b> <i>See also</i> Amorphous structure Crystal structure Dislocation density Grain size Grain structure Heterogeneous structure Hypereutectoid structures Orientation Precipitate free zone Texture
		<i>See</i> Microstructure Analysis of Ohmic Contacts to GaAs.
		<b>Mig arc welding</b> <i>See</i> Gas metal arc welding
		<b>MIG welding</b> <i>See</i> Gas metal arc welding

## Nickel base alloys

<b>Migration</b> <i>See</i> Diffusion		
<b>Mild carbon steels</b> <i>See</i> Low carbon steels		
<b>Mild steels</b> <i>See</i> Carbon steels		
<b>Miscibility</b> Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys. Decomposition and Dissolution Kinetics of $\delta'$ Precipitation in Al—Li Binary Alloys.	59-68A 1133-1141A	A Mossbauer Study of Zinc—Iron Intermediate Phases and Electrodeposited Coatings. Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: the Clustering—Ordering Synergy.
<b>Mixing</b> <i>See</i> Dispersing Mechanical alloying		
<b>Mobility</b> <i>See</i> Dislocation mobility		
<b>Modification</b> Fracture Toughness of Calcium-Modified Ultrahigh-Strength 4340 Steel.	2739-2746A	Near net shaping Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays. Spray Casting of Strip Steel: Process Analysis.
<b>Modification, Alloying effects</b> Solidification in the System Al—Ge—Si: the Phase Diagram, Coring Patterns, Eutectic Growth, and Modification.	733-740A	Neodymium, Binary systems Phase Relationships in the Neodymium—Magnesium Alloy System.
<b>Modulus of elasticity</b> Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis. Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to $I = 12$ and Their Use for the On-Line Prediction of $r$ -Value. Mechanical Properties of High-Temperature Titanium Intermetallic Compounds. Mechanical Properties of Ti—Cr—Nb Alloys and Prospects for High-Temperature Applications. Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	411-420A 697-706A 1951-1957A 2149-2154A 3063-3074A	Neodymium, Reactions (chemical) Equilibria Between Cerium or Neodymium and Oxygen in Molten Iron.
<b>Modulus of elasticity, Microstructural effects</b> Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates. Composite Ferrous Powder Metallurgy Structures: Mechanical Properties and Stress Analysis.	401-410A 2943-2955A	Neutron irradiation <i>See</i> Irradiation.
<b>Modulus of rigidity</b> <i>See</i> Shear modulus		Nickel, Casting On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.
<b>Modulus of shear</b> <i>See</i> Shear modulus		
<b>Modulus of torsion</b> <i>See</i> Shear modulus		Nickel, Composite materials Creep Behavior of Nickel—Copper Laminate Composites With Controlled Composition Gradients.
<b>Moistening</b> <i>See</i> Wetting		Nickel, Corrosion The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials. Gas Phase Embrittlement of Nickel by Sulfur.
<b>Moisture content</b> Study of Moisture Transfer During the Strand Sintering Process.	37-47B	Nickel, Crystal growth Subgrain Growth in Nickel During Recovery. Early Stages of Recrystallization in Nickel.
<b>Molding (process)</b> <i>See</i> Gating and risering		Nickel, Diffusion Improving the Calculation of Interdiffusion Coefficients.
<b>Molten metals</b> <i>See</i> Liquid metals		Nickel, Extraction The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.
<b>Molten salts</b> <i>See</i> Fused salts		The Activity Coefficients of Oxygen in Ni—S and Co—S Melts. Slipping Resulting From Gas Injection in a Pearce—Smith Converter: the Period of the Standing Wave.
<b>Molybdenum, Alloying elements</b> Influence of Molybdenum on the Creep Properties of Nickel-Base Superalloy Single Crystals.	381-388A	Nickel, Heat treatment Study of Annealing Twins in FCC Metals and Alloys.
<b>Molybdenum, Corrosion</b> Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.	2919-2928A	Nickel, Impurities A Mineralogical Overview of the Behavior of Nickel During Copper Electrorefining.
<b>Molybdenum, Powder technology</b> The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire.	919-923A	Nickel, Irradiation Radiation Effects on Time-Dependent Deformation: Creep and Growth. Effects of Preinjected Helium in Heavy-Ion Irradiated Nickel and Nickel—Copper Alloys.
<b>Molybdenum chromium nickel steels</b> <i>See</i> Nickel chromium molybdenum steels		Nickel, Mechanical properties Estimation of the Yield Strength of Metals From Crystal Defect Energies. Intergranular Fracture by Slip/Grain Boundary Interaction. Creep Behavior of Nickel—Copper Solid Solution Alloys Below $0.55 \text{ T}_m$ .
<b>Molybdenum chromium steels</b> <i>See</i> Chromium molybdenum steels		Nickel, Microstructure Dislocation Structures Ahead of Advancing Cracks.
<b>Molybdenum nickel chromium steels</b> <i>See</i> Nickel chromium molybdenum steels		Nickel, Powder technology Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering.
<b>Molybdenum steels</b> <i>See also</i> Chromium molybdenum steels		Nickel, Sorption Effect of Oxygen on Vacancy Cluster Morphology in Metals.
<b>Molybdenum steels, Metal working</b> The Boron Hardenability Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels.	1697-1708A	Nickel, Ternary systems A Reassessment of the Cr—Fe—Ni System. Thermodynamic Evaluation of the Cr—Ni—C System.
<b>Molybdenum steels, Phase transformations</b> Growth and Overall Transformation Kinetics Above the Bay Temperature in Fe—C—Mo Alloys. The Incomplete Transformation Phenomenon in Fe—C—Mo Alloys.	1413-1432A 1433-1463A	Nickel, Welding Hydrogen Permeation in Stationary Arc-Melted Nickel 200.
<b>Monel</b> <i>See</i> Nickel base alloys		Nickel base alloys, Casting A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.
<b>Monitoring</b> Ultrasonic Velocity Change With Creep Damage in Copper, Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	1725-1732A 2747-2757A	Nickel base alloys, Coating The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminum Coating. Interface Stability in the Ni—Cr—Al System. I. Morphological Stability of $\beta$ -Ni <sub>50</sub> Al Diffusion Couple Interfaces at 1150°C. Interface Stability in the Ni—Cr—Al System. II. Morphological Stability of $\beta$ -Ni <sub>50</sub> Al vs. $\gamma$ -Ni <sub>40</sub> Cr Diffusion Couple Interfaces at 1150°C.
<b>Monocrystals</b> <i>See</i> Single crystals		Nickel base alloys, Coatings Diffusion of Sputtered Inconel 617 Coatings in Titanium.
<b>Mossbauer spectroscopy</b> <sup>197</sup> Au Mossbauer Study of the Gold Species Adsorbed on Carbon From Cyanide Solutions.	239-249B	Nickel base alloys, Composite materials Fracture Behavior of Laminated Metal—Metallic Glass Composites.
		Nickel base alloys, Corrosion Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Base Superalloys.

## Nickel base alloys

<b>Nickel base alloys, Crystal growth</b> Effects of the Amount of $\gamma$ and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Based Superalloys.	547-555A	<b>Nickel chromium steels</b> See also Nickel chromium molybdenum steels
<b>Nickel base alloys, Diffusion</b> Applications of the Square Root Diffusivity to Diffusion in Ni-Al-Cr Alloys.	2679-2685A	<b>Nickel chromium steels, Microstructure</b> High-Resolution Auger Electron Spectroscopy of Grain Boundary Phosphorus Segregation in NiCrMoV and NiCr Steels.
<b>Nickel base alloys, Directional solidification</b> Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems.	1311-1318A	2817-2821A
<b>Nickel base alloys, Heat treatment</b> Effects of Cooling Rate and $\gamma$ Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.	1709-1717A	<b>Nickel compounds, Crystal lattices</b> Preferred Orientations in Extruded Nickel and Iron Aluminides.
Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690. Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades.	2097-2107A	279-288A
<b>Nickel base alloys, Irradiation</b> Effects of Preinjected Helium in Heavy-Ion Irradiated Nickel and Nickel-Copper Alloys.	1847-1851A	<b>Nickel compounds, Diffusion</b> On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.
<b>Nickel base alloys, Mechanical properties</b> Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened Inconel MA-754.	177-187A	2339-2354A
Influence of Molybdenum on the Creep Properties of Nickel-Based Superalloy Single Crystals.	381-388A	<b>Nickel compounds, Irradiation</b> Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.
Influence of Test Parameters on the Thermal-Mechanical Fatigue Behavior of a Superalloy.	389-399A	1809-1815A
Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.	2169-2177A	<b>Nickel compounds, Mechanical properties</b> Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped Ni <sub>70</sub> Al <sub>19</sub> Ti <sub>1</sub> Single Crystals.
Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A	107-115A
Creep Behavior of Nickel-Copper Solid Solution Alloys Below 0.55 T <sub>m</sub> .	2601-2605A	Effect of Cooling Rate on Hardness of FeAl and NiAl. Intergranular Fracture by Slip/Grain Boundary Interaction.
Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.	3215-3220A	Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a Ni <sub>3</sub> Al-Based Alloy.
<b>Nickel base alloys, Melting</b> Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	723-731B	2967-2976A
Influence of Gravity on the Dispersoids During the Melting of an Oxide Dispersion-Strengthened Alloy (Inconel MA754).	753-755A	<b>Nickel compounds, Microstructure</b> Microscopy and Tensile Behavior of Melt-Spun Ni-Al-Fe Alloys.
<b>Nickel base alloys, Microstructure</b> An In Situ Transmission Electron Microscope Deformation Study of the Slip Transfer Mechanisms in Metals.	2437-2447A	959-970A
<b>Nickel base alloys, Reactions (chemical)</b> Activity of Boron in Ni-B-C Melts Saturated With Carbon.	791-793B	<b>Nickel compounds, Phases (state of matter)</b> Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.
<b>Nickel base alloys, Welding</b> A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.	479-488A	2897-2903A
<b>Nickel chromium molybdenum steels, Corrosion</b> Effect of Prior Austenitic Grain Size on Stress Corrosion Cracking of a High-Strength Steel.	503-505A	<b>Nickel iron, Phase transformations</b> A Kinetic Model of the $\gamma \rightarrow \alpha + \text{Gr}$ Eutectoid Transformation in Spheroidal Graphite Cast Irons.
Fatigue Threshold and Low-Rate Crack Propagation Properties for Structural Steels in 3% Sodium Chloride Aqueous Solution.	2189-2199A	913-918A
Effect of Threshold Stress Intensity on Fracture Mode Transitions for Hydrogen-Assisted Cracking in AISI 4340 Steel. An Investigation of Environmental Effects on Fatigue Crack Growth in Q1N (HY80) Steel.	2577-2583A	<b>Nickel molybdenum chromium steels</b> See Nickel chromium molybdenum steels
<b>Nickel chromium molybdenum steels, Heat treatment</b> Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon (~ 0.20 wt.%) Steels.	3153-3164A	<b>Nickel molybdenum steels</b> See Nickel chromium molybdenum steels
<b>Nickel chromium molybdenum steels, Mechanical properties</b> Microscopic Observations of Adiabatic Shear Bands in Three Different Steels.	1161-1175A	<b>Nickel steels</b> See also Nickel chromium steels
Measurement of Fatigue Accumulation in High-Strength Steels by Microstructural Examination.	1989-1996A	<b>Nickel steels, Heat treatment</b> Discussion of "Spinaloid Decomposition During Aging of Fe-Ni-C Martensites" and Structure of the Fe <sub>3</sub> C Carbide.
Mixed Mode I/III Fracture Toughness of an Experimental Rotor Steel.	2539-2545A	2083-2086A
On the Analysis of Delamination Fractures in High-Strength Steels.	2565-2575A	<b>Nickel steels, Structural hardening</b> Correction to "Carbide Precipitation During Stage I Tempering of Fe-Ni-C Martensites".
Fracture Toughness of Calcium-Modified Ultrahigh-Strength 4340 Steel.	2739-2746A	2749-2765A
<b>Nickel chromium molybdenum steels, Melting</b> Electromagnetic Stirring With Alternating Current During Electroslag Remelting.	723-731B	<b>Niobium, Alloying elements</b> The Flow and Fracture of a Ti <sub>3</sub> Al-Nb Alloy.
<b>Nickel chromium molybdenum steels, Microstructure</b> Observation of an Adiabatic Shear Band in AISI 4340 Steel by High-Voltage Transmission Electron Microscopy.	707-716A	135-143A
Morphology and Properties of Low-Carbon Bainite.	877-888A	<b>Niobium, Composite materials</b> High-Temperature Interactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.
High-Resolution Auger Electron Spectroscopy of Grain Boundary Phosphorus Segregation in NiCrMoV and NiCr Steels.	2817-2821A	2829-2837A
<b>Nickel chromium molybdenum steels, Phase transformations</b> The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.	859-875A	<b>Niobium, Corrosion</b> Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K. Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.
<b>Nickel chromium molybdenum steels, Rolling</b> Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.	2555-2563A	1959-1967A
<b>Nickel chromium molybdenum steels, Welding</b> Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.	1287-1298A	2919-2928A
<b>Nitrogen, Solubility</b> Nitrogen Solubility in CaO-SiO <sub>2</sub> , CaO-MgO-SiO <sub>2</sub> , and BaO-MgO-SiO <sub>2</sub> Melts.		2929-2934A
Nitrogen Solubility in CaO-CaF <sub>2</sub> -SiO <sub>2</sub> Melts.		3063-3074A
Nitrogen Solution in BaO-B <sub>2</sub> O <sub>3</sub> and CaO-B <sub>2</sub> O <sub>3</sub> Slags.		441-446A
<b>Nitriding</b> Development and Relaxation of Stress in Surface Layers; Composition and Residual Stress Profiles in $\gamma'$ -Fe <sub>4</sub> N <sub>1-x</sub> Layers on $\alpha$ -Iron Substrates.		441-446A
Phase Transformations and Stress Relaxation in $\gamma'$ -Fe <sub>4</sub> N <sub>1-x</sub> Surface Layers During Oxidation.		189-204A
Plasma Source Nitrogen Ion Implantation of Ti-6Al-4V.		901-912A
<b>Nitrocarburizing</b> See Carburitizing		1663-1667A
<b>Nitrogen, Solubility</b> Nitrogen Solubility in CaO-SiO <sub>2</sub> , CaO-MgO-SiO <sub>2</sub> , and BaO-MgO-SiO <sub>2</sub> Melts.		97-104B
Nitrogen Solubility in CaO-CaF <sub>2</sub> -SiO <sub>2</sub> Melts.		105-109B
Nitrogen Solution in BaO-B <sub>2</sub> O <sub>3</sub> and CaO-B <sub>2</sub> O <sub>3</sub> Slags.		1025-1032B

## Outgassing

<b>Nitrogen, Sorption</b>		
Interaction Behavior of Nitrogen in Liquid Niobium.	845-853B	Effects of Crack Tip Stress States and Hydride-Matrix Interaction Stresses on Delayed Hydride Cracking.
<b>Nitrogen, Ternary systems</b>		2905-2917A
A Thermodynamic Evaluation of the Cr—Fe—N System.	2477-2488A	
<b>Nitrogen compounds</b>		
<i>See</i> Nitrides		
<b>Nodular iron, Phase transformations</b>		
A Kinetic Model of the $\gamma \rightarrow \alpha + \text{Gr}$ Eutectoid Transformation in Spheroidal Graphite Cast Irons.	913-918A	Nucleation
<b>Nondestructive testing</b>		Coupled Diffusional/Displacive Transformations. II. Solute Trapping.
<i>See also</i> Ultrasonic testing		Nucleation and Growth of Bainite Crystals in Cu—Zn—Al Alloys.
The Acoustoelastic Response of a Textured Material During Elastic—Plastic Deformation.	3011-3019A	Early Stages of Recrystallization in Nickel.
<b>Nonferrous alloys</b>		Nucleation, Field effects
<i>See</i> Cobalt base alloys		Influence of Low-Gravity Solidification on Heterogeneous Nucleation in Stable Iron—Carbon Alloys.
Nickel base alloys		1541-1545A
Zinc base alloys		2215-2221A
Zirconium base alloys		
<b>Nonferrous metals</b>		Nucleation, Radiation effects
<i>See</i> Cobalt		Bulk Processing of Materials With Radiation.
Copper		1823-1827A
Hafnium		
Manganese		
Nickel		
Yttrium		
Zinc		
Zirconium		
<b>Nonferrous smelting</b>		Nuclei (transformation)
<i>See</i> Smelting		<i>See</i> Nucleation
<b>Nonmetallic inclusions</b>		Numerical analysis
High Strain-Rate-Induced Cleavage Fracture in Mild Carbon Steel.	431-439A	Fluid Dynamics of a Stationary Weld Pool.
Thermodynamics of Inclusion Formation in Fe—Ti—C—N Alloys.	879-884B	45-57A
Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.	1287-1298A	Oiling (lubrication)
Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Deoxidized Steel Weld Metals.	2047-2058A	<i>See</i> Lubrication
<b>Nonmetals</b>		Open flame furnaces
<i>See</i> Hydrogen		<i>See</i> Reverberatory furnaces
<b>Normalizing (heat treatment)</b>		Order disorder
Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon (~ 0.20 wt.%) Steels.	3153-3164A	<i>See also</i> Short range order
<b>Notch ductility</b>		Structure, Tensile Deformation, and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.
<i>See</i> Ductility		Decomposition and Dissolution Kinetics of $\delta'$ Precipitation in Al—Li Binary Alloys.
<b>Notch effect</b>		Order disorder, Cooling effects
<i>See</i> Notch sensitivity		Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.
<b>Notch impact strength</b>		959-970A
<i>See</i> Impact strength		<b>Order disorder, Heating effects</b>
<b>Notch impact tests</b>		Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: the Clustering—Ordering Synergy.
<i>See</i> Impact tests		589-602A
<b>Notch sensitivity</b>		<b>Order disorder, Radiation effects</b>
Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. I. Fracture Behavior.	313-320A	Amorphization in Zr <sub>3</sub> Al Irradiated With 1 MeV e <sup>—</sup> and Kr <sup>+</sup> .
Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. II. Micromechanism of Fracture.	321-330A	1799-1808A
Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a Ni <sub>3</sub> Al-Based Alloy.	2967-2976A	<b>Ordered alloys</b>
<b>Notch toughness</b>		<i>See</i> Intermetallics
Mechanical Properties of Ti—Cr—Nb Alloys and Prospects for High-Temperature Applications.	2149-2154A	<b>Ordering</b>
<i>See</i> Tension tests		<i>See</i> Order disorder
<b>Nuclear energy</b>		<b>Ores</b>
<i>See</i> Nuclear power generation		<i>See</i> Iron ores
<b>Nuclear fuels, Irradiation</b>		<b>Orientation</b>
Swelling Behavior of U—Pu—Zr Fuel.	517-528A	<i>See also</i> Grain orientation
Experimental Studies of U—Pu—Zr Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II.	1863-1870A	Orientation relationships
Fuel Constituent Redistribution During the Early Stages of U—Pu—Zr Irradiation.	1871-1876A	Preferred orientation
<b>Nuclear fusion reactors</b>		Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened Inconel MA-754.
Phase Transitions in Rapidly Solidified Stainless Steels Cationically Hydrogen Charged.	1251-1259A	Stereoscopic Presentation of Rodrigues Vector Representation of the Full Three-Dimensional Disorientation of Iron Crystals by Rolling.
The Effect of Tempering and Aging on a Low Activation Martensitic Steel.	1853-1861A	177-187A
<b>Nuclear power generation</b>		<b>Orientation, Deformation effects</b>
Fracture Mechanics and the Nuclear Industry.	1097-1104A	Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.
<b>Nuclear power plants</b>		2555-2563A
<i>See</i> Nuclear power generation		<b>Orientation, relationships</b>
<b>Nuclear power reactors</b>		Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped Ni <sub>78</sub> Al <sub>10</sub> Ti <sub>2</sub> Single Crystals.
Review of Small Specimen Test Techniques for Irradiation Testing.	1105-1119A	Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.
<b>Nuclear reactors</b>		Orientation Relationships Among M <sub>23</sub> C <sub>6</sub> , M <sub>6</sub> C, and Austenite in an Fe—Mn—Al—Mo—C Alloy.
<i>See also</i> Breeder reactors		Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to l = 12 and Their Use for the On-Line Prediction of r-Value.
Experimental nuclear reactors		Simple Geometry and Crystallography Applied to Ferrous Bainites.
Fast nuclear reactors		Transformation of Lower Bainite in Hypereutectoid Steels.
Nuclear fusion reactors		A General Method for Estimation of Fracture Surface Roughness. I. Theoretical Aspects.
Nuclear power reactors		107-115A
<i>See</i> Nuclear power generation		A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.
<b>OSM process</b>		Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Based Alloys.
<i>See</i> Oxygen steel making		Application of the Double-Shear Theory of Martensite Crystallography to the $\beta \rightarrow \alpha'$ Transformation in an U(Ga) Alloy.
<b>Osprey process</b>		Characterization of the Morphological and Lattice Orientation Microstructure of As-Cast Aluminum Ingot.
<i>See</i> Spray casting		Evidence for HCP Needelike Martensite in a Duplex Fe—Mn—Al—C Alloy.
<b>Outgassing</b>		Development of Ferrite Rolling Textures in Low- and Extra Low-Carbon Steels.
The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials.	1021-1035A	2815-2817A
Contributions From Research on Irradiated Ferritic/Martensitic Steels to Materials Science and Engineering.	1065-1071A	2985-3000A
		<b>Orientation relationships, Composition effects</b>
		Microstructure and Its Development in Cu—Al—Ni Alloys.
		575-588A
		<b>Orientation relationships, Cooling effects</b>
		Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.
		959-970A
		<b>OSM process</b>
		<i>See</i> Oxygen steel making
		<b>Osprey process</b>
		<i>See</i> Spray casting
		<b>Outgassing</b>
		The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials.
		603-608A

## Oxidation

<b>Oxidation</b>	Kinetics of the Dissolution of Zinc Sulfide in an Oxidizing Slag.	867-872B	<b>Pearlite</b>	Effect of Pearlite Morphology on Hydrogen Permeation, Diffusion, and Solubility in Carbon Steels.	3257-3258A
<b>Oxidation rate</b>	The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A	<b>Perroso tiling</b>	See Quasicrystalline structure	
	Mechanical Properties of Ti—Cr—Nb Alloys and Prospects for High-Temperature Applications.	2149-2154A	<b>Permalloy</b>	See Ferrous alloys Magnetic alloys Nickel base alloys Permanent magnets	
<b>Oxide cathodes</b>	See Cathodes		<b>Permanent magnets, Irradiation</b>	Sm—Co Permanent Magnets: Effects of Fast Neutron Irradiation.	1817-1821A
<b>Oxides</b>	See also Aluminum oxide Lime		<b>Permanent mold casting</b>	See Die casting	
<b>Oxides, Alloying additive</b>	Effect of Rare Earth Metal Oxide Additions to Tungsten Electrodes.	3221-3236A	<b>Permeability</b>	In Situ Measurement of Effective Gas Diffusivity Through Hematite Pellets During Stepwise Reductions.	677-687B
<b>Oxides, Composite materials</b>	Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	441-446A	<b>Phase boundary</b>	Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Base Alloys.	1627-1643A
<b>Oxides, Microstructure</b>	Low-Energy Interfaces in NiO—ZrO <sub>2</sub> (CaO) Eutectic.	2309-2315A		Microstructure of a Pressure-Cast Fe <sub>3</sub> Al Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers.	2881-2889A
<b>Oxides, Phases (state of matter)</b>	Phase Diagram of Cu <sub>2</sub> O—CuO—Y <sub>2</sub> O <sub>3</sub> System in Air.	2243-2248A	<b>Phase boundary, Radiation effects</b>	Radiation as a Tool in Understanding Phase Transformations.	1073-1082A
<b>Oxidizing</b>	See Oxidation			Fuel Constituent Redistribution During the Early Stages of U—Pu—Zr Irradiation.	1871-1876A
<b>Oxygen, Dopants</b>	The Effect of Oxygen on Void Stability in Ion-Irradiated Steel.	1839-1846A	<b>Phase decomposition</b>	See also Eutectoid decomposition Spinodal decomposition	
<b>Oxygen, Impurities</b>	The Influence of Oxygen on the Structure, Fracture, and Fatigue Crack Propagation Behavior of Ti—8.6 wt.% Al.	95-105A		Overall Reaction Kinetics and Morphology of Austenite Decomposition Between the Upper Nose and the M <sub>s</sub> of a Hypoeutectoid Fe—C—Cr Alloy.	1465-1478A
<b>Oxygen, Reactions (chemical)</b>	Equilibria Between Cerium or Neodymium and Oxygen in Molten Iron.	295-302B	<b>Phase decomposition, Heating effects</b>	The Tempering of Iron—Nitrogen Martensite; Dilatometric and Calorimetric Analysis.	13-26A
<b>Oxygen, Ternary systems</b>	An Assessment of the Ca—Fe—O System.	2759-2776A	<b>Phase diagram reactions</b>	See also Eutectic reactions Eutectoid reactions Martensitic transformations Phase decomposition	
<b>Oxygen compounds</b>	See Oxides Silicates			Bainite in Steels.	767-779A
<b>Oxygen conversion processes</b>	See Oxygen steel making			On Bainite Formation.	811-816A
<b>Oxygen steel making</b>	Theoretical Interpretation of the Decarburization Mechanism in Convective Oxygen Steelmaking.	49-57B		The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.	859-875A
<b>Packing (amorphous structure)</b>	See Amorphous structure			An Investigation of the Generality of Incomplete Transformation to Bainite in Fe—C—X Alloys.	1479-1491A
<b>Packing (crystal density)</b>	See Crystal structure			Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Base Alloys.	1627-1643A
<b>Packing (liquid structure)</b>	See Atomic structure		<b>Phase diagram reactions, Radiation effects</b>	Bulk Processing of Materials With Radiation.	1823-1827A
<b>Palladium, Alloying elements</b>	Microstructure, Deformation, and Fracture Characteristics of an Al <sub>67</sub> Pd <sub>31</sub> Ti <sub>2</sub> Intermetallic Alloy.	145-151A	<b>Phase diagrams</b>	An Assessment of the CaO—SiO <sub>2</sub> System.	303-312B
<b>Palladium, Corrosion</b>	The Use of Silver Decoration Technique in the Study of Hydrogen Transport in Metallic Materials.	603-608A		Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.	313-320B
<b>Parameters</b>	See Lattice parameters Welding parameters			Mechanical Properties and Microstructures of Al—Mg—Sc Alloys.	421-430A
<b>Particle size</b>	Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A		Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	441-446A
	Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays.	899-912B		Application of the Quasi-Subregular Solution Model: the Iron—Carbon System.	447-453A
<b>Particulate composites</b>	Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A		Gibbs Energies of Formation of Intermetallic Phases in the Systems Pt—Mg, Pt—Ca, and Pt—Ba and Some Applications.	521-527B
<b>Particulate composites, Casting</b>	Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	2073-2082A		Phase Relationships in the Al—Ta System.	539-545A
	Microscopic Examination of the Interface Region in 6061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.	2489-2496A		Microstructure and Its Development in Cu—Al—Ni Alloys.	575-588A
<b>Particulate composites, Directional solidification</b>	The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.	231-239A		Thermodynamic Study and the Phase Diagram of the Mg—Si System.	707-714B
<b>Particulate composites, Mechanical properties</b>	Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates.	401-410A		Solidification in the System Al—Ge—Si: the Phase Diagram, Coring Patterns, Eutectic Growth, and Modification.	733-740A
	Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.	411-420A		Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.	959-970A
	The Effect of Matrix Reinforcement Reaction on Fracture in Ti—6Al—4V-Base Composites.	1579-1587A		Radiation as a Tool in Understanding Phase Transformations.	1073-1082A
	High-Temperature Slow-Strain-Rate Compression Studies on Coal—TiB <sub>2</sub> Composites.	2179-2188A		Decomposition and Dissolution Kinetics of $\beta'$ Precipitation in Al—Li Binary Alloys.	1133-1141A
<b>Particulate composites, Powder technology</b>	Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.	1589-1593A		The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A
				Applications of Solid Electrolytes in Thermodynamic Studies of Materials: a Review.	1223-1250A
				Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems.	1311-1318A
				Influence of Carbon Concentration and Reaction Temperature Upon Bainite Morphology in Fe—C—2Mn Alloys.	1391-1411A
				Diffusion of Sputtered Inconel 617 Coatings in Titanium.	1613-1625A
				Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Base Alloys.	1627-1643A
				Particle Coarsening Behavior of $\alpha$ — $\beta$ Titanium Alloys.	1645-1654A
				The Structure of the High-Temperature Phase Mn <sub>3</sub> Al <sub>6</sub> and the Displacive Transformation From Mn <sub>3</sub> Al <sub>6</sub> Into Mn <sub>5</sub> Al <sub>6</sub> .	1669-1672A
				A Reassessment of the Cr—Fe—Ni System.	1673-1680A
				Extended Al/Mn <sub>3</sub> Solution in a Rapidly Solidified Al—Mn—Zr Alloy.	1785-1789A
				The Ag—Au—Si System: Experimental and Calculated Phase Diagram.	1877-1884A
				Interface Behavior in the Ni—Cr—Al System. I. Morphological Stability of $\beta$ — $\gamma$ Diffusion Couple Interfaces at 1150°C.	1901-1910A
				Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A

<b>Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferrite Steel.</b>	2021-2036A	<b>Photography</b> <i>See</i> Stereophotography	
<b>Phase Relationships in the Neodymium—Magnesium Alloy System.</b>	2109-2114A	<b>Physical chemistry</b> The Unified Interaction Parameter Formalism: Thermodynamic Consistency and Applications.	1997-2002A
A Thermodynamic Assessment of the Fe—Mn—C System.	2115-2123A		
Phase Diagram of Cu <sub>2</sub> O—CuO—Y <sub>2</sub> O <sub>3</sub> System in Air.	2243-2248A		
The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A	<b>Physical metallurgy</b> Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision.	285-294B
A Thermodynamic Evaluation of the Cr—Fe—N System.	2477-2488A		
Lattice Imperfections Studied by X-Ray Diffraction in Deformed Aluminum-Based Alloys: Al—Ga Alloy.	2597-2598A	<b>Physical properties</b>	
Discussion of "On the Free Energy of Formation of TiC and Al <sub>2</sub> C <sub>3</sub> ."	2609-2610A	See Adhesion Anisotropy Diffusivity Miscibility Permeability Porosity Solubility Surface tension Wettability	
An Assessment of the Ca—Fe—O System.	2759-2776A		
Thermodynamic Evaluation of the Cr—Ni—C System.	2777-2787A		
Microstructure, Crystallization, and Coarsening of Rare Earth—Iron—Boron Amorphous Alloy Ribbons.	2805-2814A	<b>Pickling</b> Solution Chemistry of HNO <sub>3</sub> /HF Pickle Mixtures.	5-9B
Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.	2897-2903A	<b>Piercing</b> Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.	153-164A
<b>Phase transformations</b>		<b>Piles (nuclear)</b> <i>See</i> Nuclear reactors	
<i>See also</i> Martensitic transformations		<b>Pinning (flux)</b> <i>See</i> Flux pinning	
The Distribution of Substitutional Alloying Elements During the Bainite Transformation.	837-844A	<b>Pitting (corrosion)</b> Stress Corrosion Cracking of Copper Bicrystals With (110)-Tilt $\Delta\theta$ , $\Delta\theta$ , and $\Delta\Omega$ Coincident Site Lattice Boundaries.	2355-2361A
Transformation of Lower Bainite in Hypereutectoid Steels.	845-851A	<b>Pitting (wear)</b> Rolling Contact Fatigue and Fatigue Crack Propagation in 1C—1.5Cr Bearing Steel in the Bainite Condition.	889-893A
The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.	859-875A	<b>Pitting potential</b> <i>See</i> Pitting (corrosion)	
A Kinetic Model of the $\gamma \rightarrow \alpha + \text{Gr}$ Eutectoid Transformation in Spheroidal Graphite Cast Irons.	913-918A	<b>Plasma arc casting</b> <i>See</i> Casting	
Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb: Applications to Fusion Welding.	1273-1286A	<b>Plasma arc welding</b> A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.	479-488A
Study of Phase Transition in Ti <sub>50</sub> Ni <sub>47.5</sub> Fe <sub>2.5</sub> Alloy.	1322-1324A	<b>Plasma processing</b> <i>See also</i> Plasma arc welding Modeling of Materials Synthesis in Hybrid Plasma Reactors: Production of Silicon by Thermal Decomposition of SiCl <sub>4</sub> .	589-598B
Influence of Carbon Concentration and Reaction Temperature Upon Bainite Morphology in Fe—C—2Mn Alloys.	1391-1411A	<b>Plastic deformation</b> Microstructure, Deformation, and Fracture Characteristics of an Al <sub>7</sub> Pd <sub>6</sub> Ti <sub>25</sub> Intermetallic Alloy.	145-151A
Growth and Overall Transformation Kinetics Above the Bay Temperature in Fe—C—Mo Alloys.	1413-1432A	The Acoustic-Elastic Response of a Textured Material During Elastic—Plastic Deformation.	3011-3019A
The Incomplete Transformation Phenomenon in Fe—C—Mo Alloys.	1433-1463A	<b>Plastic flow</b> A Study of Void Nucleation, Growth, and Coalescence in Spheroidized 1518 Steel.	117-134A
Overall Reaction Kinetics and Morphology of Austenite Decomposition Between the Upper Nose and the M <sub>s</sub> of a Hypoeutectoid Fe—C—Cr Alloy.	1465-1478A	The Flow and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.	135-143A
An Investigation of the Generality of Incomplete Transformation to Bainite in Fe—C—X Alloys.	1479-1491A	Stress Distributions and Material Response in Thermal Spraying of Metallic and Ceramic Deposits.	377-385B
Continuous Cooling Transformations and Microstructures in a Low-Carbon, High-Strength Low-Alloy Plate Steel.	1493-1507A	<b>Plastic flow, Impurity effects</b> Effect of Impurity Content on Cavitation in the Superplastic Zn—22Al Alloy.	2605-2608A
Nucleation and Growth of Bainite Crystals in Cu—Zn—Al Alloys.	1541-1545A	<b>Plastic strain</b> <i>See</i> Plastic deformation	
Analysis of the Composition of $\alpha$ Plates Isothermally Formed in Titanium Binary Alloys.	1547-1556A	<b>Plasticity</b> <i>See also</i> Superplasticity Microstructure, Deformation, and Fracture Characteristics of an Al <sub>7</sub> Pd <sub>6</sub> Ti <sub>25</sub> Intermetallic Alloy.	145-151A
Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Based Alloys.	1627-1643A	The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels.	653-665A
The Structure of the High-Temperature Phase MnAl(h) and the Displacive Transformation From MnAl(h) into MnAl <sub>2</sub> .	1669-1672A	Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A
Thermal Expansion and Elastic Properties of High Gold—Ti Alloys.	1885-1889A	Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	3063-3074A
Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Decarburized Steel Weld Metals.	2047-2058A	<b>Plasticity, Radiation effects</b> Residual Grain-Interaction Stresses in Zirconium Alloys.	1083-1095A
An Investigation of the High-Temperature and Solidification Microstructures of PH 13-8 Molybdenum Stainless Steel. Ledges and Carbides in Lower Bainite in a Hypereutectoid Steel.	2465-2475A	<b>Plate metal, Mechanical properties</b> Through-Thickness Fracture of a Ti—V—N Plate Steel.	1177-1191A
<b>Phase transformations, Alloying effects</b>	2637-2641A	<b>Plating</b> <i>See</i> Alloy plating Electroplating Zinc plating	
The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe—C—Ti Alloys.	1509-1515A	<b>Plating baths</b> The Effects of Lead on the Electrochemical and Adhesion Behavior of Zinc Electrodeposits.	81-86B
The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe—C—Si—Mn Alloys.	1517-1525A	<b>Platinum, Diffusion</b> Improving the Calculation of Interdiffusion Coefficients.	3039-3047A
Effect of Silicon Addition on the Microstructure of an Fe—8.0Al—29.0Mn—0.90C Alloy.	1891-1899A	<b>Platinum, Mechanical properties</b> The Fracture Energy of Bimaterial Interfaces.	2419-2429A
<b>Phase transformations, Corrosion effects</b>	1251-1259A	<b>Platinum metal compounds</b> <i>See</i> Iridium compounds Ruthenium compounds	
Phase Transitions in Rapidly Solidified Stainless Steels Caused by Hydrogen Charged.	895-899A	<b>Platinum metals</b> <i>See</i> Palladium Platinum Ruthenium	
<b>Phase transformations, Heating effects</b>	901-912A		
Mechanism of Bainitic Transformation in Compacted Graphite Cast Irons.	1073-1082A		
Phase Transformations and Stress Relaxation in $\gamma'$ -Fe <sub>2</sub> N <sub>1-x</sub> Surface Layers During Oxidation.	2599-2601A		
<b>Phase transformations, Radiation effects</b>			
Radiation as a Tool in Understanding Phase Transformations.			
<b>Phase transformations, Stress effects</b>			
An In Situ Scanning Electron Microscope Kossel X-Ray Diffraction Study of the Elastic Aftereffect in a Ferroelastic Alloy.			
<b>Phases (state of matter)</b>			
<i>See</i> Icosahedral phase Intermetallic phases Liquid phases Metastable phases			
<b>Phosphorus, Alloying elements</b>			
A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.	697-706B		
<b>Phosphorus, Diffusion</b>			
High-Resolution Auger Electron Spectroscopy of Grain Boundary Phosphorus Segregation in NiCrMoV and NiCr Steels.	2817-2821A		
<b>Phosphorus, Impurities</b>			
Effect of Impurity Content on Creep Crack Growth Resistance in 1Cr1Mo0.25V Ferritic Steels.	1941-1949A		
<b>Photo oxidation</b>			
<i>See</i> Oxidation			

## Point defects

### Point defects

*See also* Lattice vacancies

### Point defects, Radiation effects

Amorphization in  $Zr_3Al$  Irradiated With 1 MeV  $e^-$  and  $Kr^+$ . Modeling Dislocation Evolution in Irradiated Alloys. 1799-1808A 1829-1837A

### Pole figures

Residual Grain-Interaction Stresses in Zirconium Alloys. 1083-1095A  
Ultrasonic Velocity Change With Creep Damage in Copper. 1725-1732A  
Characterization of the Morphological and Lattice Orientation Microstructure of As-Cast Aluminum Ingot. 2265-2275A  
Interface Characterization of Epitaxial Silver Films on Si(100) and Si(111) Grown by Molecular Beam Epitaxy. 2323-2332A  
Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels. 2555-2563A

### Pole figures, Deformation effects

Preferred Orientations in Extruded Nickel and Iron Aluminides. 279-288A  
Development of Orientation Coherence in Plane-Strain Deformation. 2223-2236A  
Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing. 3001-3010A  
The Acoustoelastic Response of a Textured Material During Elastic—Plastic Deformation. 3011-3019A

### Pole figures, Heating effects

Annealing Response of 3000 and 5000 Series Aluminum Alloys. 2643-2654A

### Poling

*See* Deoxidizing

### Polishing (finishing)

*See* Mechanical polishing

### Polycrystals

*See* Bicrystals

### Pores

*See* Porosity

### Porosity

Modeling of Feeding Behavior of Solidifying Al—7Si—0.3Mg Alloy Plate Casting. 715-722B  
Degree of Pore-Grain Boundary Contact During Sintering. 2137-2139A  
Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering. 2935-2941A

### Porosity, Radiation effects

Fuel Constituent Redistribution During the Early Stages of  $U—Pu—Zr$  Irradiation. 1871-1876A

### Porous materials

*See* Porous metals

### Porous metals

The Effects of Impurity Elements on the Reduction of Wustite and Magnetite to Iron in  $CO/CO_2$  and  $H_2/H_2O$  Gas Mixtures. 743-751B

### Porous metals, Powder technology

Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering. 2935-2941A

### Positron annihilation

Positron Spectroscopy for Materials Characterization. 1121-1131A  
Positron Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing. 2037-2045A

### Post irradiation

*See* Irradiation

### Potassium, Dopants

The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire. 919-923A

### Powder compacts

*See* Sintered compacts

### Powder metallurgy

*See also* Sintering (powder metallurgy)  
The Combustion Synthesis of Copper Aluminides. 567-577B

### Powder metallurgy parts, Heat treatment

Effects of Cooling Rate and  $\gamma'$  Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy. 1709-1717A

### Powder metallurgy parts, Mechanical properties

Crack-Tip Behaviors of Stationary and Growing Cracks in  $Al—Fe—X$  Alloys. I. Near-Tip Strain Field. 69-80A  
Crack-Tip Behaviors of Stationary and Growing Cracks in  $Al—Fe—X$  Alloys. II. Crack Opening Profile. 81-86A  
The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys. 744-748A  
The Effect of Matrix Reinforcement Reaction on Fracture in  $Ti—6Al—4V$ -Base Composites. 1579-1587A  
Composite Ferrous Powder Metallurgy Structures: Mechanical Properties and Stress Analysis. 2943-2955A

### Powder technology

*See* Atomizing

Powder metallurgy

### Powdering

The Physics of Mechanical Alloying: a First Report. 289-303A  
Extended Al/Mn Solution in a Rapidly Solidified  $Al—Li—Mn—Zr$  Alloy. 1785-1789A

### Power reactors (nuclear)

*See* Nuclear power reactors

### Precious metal alloys

*See* Gold base alloys

*See* Silver base alloys

### Precious metals

*See* Gold  
Silver

### Precipitate free zone, Deformation effects

The Effect of Fatigue Deformation on Microstructural Evolution in a Superplastic Aluminum—Zinc Eutectoid Alloy. 2505-2511A

### Precipitates

*See also* Cellular precipitates

Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates. 401-410A

### Precipitation

*See also* Intergranular precipitation

Continuous Precipitation of Uranium With Hydrogen Peroxide. 819-826B

High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation. 853-858A

Effect of Cerium Content on the Deformation Behavior of Rapidly Solidified  $Al—Fe—Ce$  Alloys. 2155-2158A

Ledges and Carbides in Lower Bainite in a Hypereutectoid Steel. 2637-2641A

### Precipitation, Cooling effects

Effects of Cooling Rate and  $\gamma'$  Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy. 1709-1717A

Structure of Continuously Cooled Low-Carbon Vanadium Steels. 2839-2855A

### Precipitation, Deformation effects

The Boron Hardenability Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels. 1697-1708A

### Precipitation, Heating effects

The Tempering of Iron—Nitrogen Martensite; Dilatometric and Calorimetric Analysis. 13-26A

The Effect of Tempering and Aging on a Low Activation Martensite Steel. 1853-1861A

Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690. 2097-2107A

The Evolution of Microstructure in  $Al—2Cr$  Thin Films: Precipitation, Dissolution, and Reprecipitation. 2449-2458A

Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades. 3115-3125A

### Precipitation hardening

Modulated Structure and Magnetic Properties of Age-Hardenable  $Fe—Mn—Al—C$  Alloys. 5-11A

Orientation Relationships Among  $M_2C_6$ ,  $M_6C$ , and Austenite in an  $Fe—Mn—Al—Mo—C$  Alloy. 567-574A

Decomposition and Dissolution Kinetics of  $\delta$  Precipitation in  $Al—Li$  Binary Alloys. 1133-1141A

A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite. 1571-1578A

Particle Coarsening Behavior of  $\alpha—\beta$  Titanium Alloys. 1645-1654A

Precipitation Reactions and Strengthening Behavior in 18 wt % Nickel Maraging Steels. 2655-2668A

Correction to "Carbide Precipitation During Stage I Tempering of  $Fe—Ni—Cr$  Martensites". 2749-2765A

Large-Strain Bauschinger Effects in FCC Metals and Alloys. 3201-3213A

### Precipitation hardening, Deformation effects

Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules. 153-164A

*See also* Precipitation hardening steels

### Precipitation hardening alloys, Mechanical properties

Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys. 1151-1159A

Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings. 3215-3220A

### Precipitation hardening steels

*See also* Maraging steels

### Precipitation hardening steels, Phase transformations

An Investigation of the High-Temperature and Solidification Microstructures of PH 13-8 Molybdenum Stainless steel. 2465-2475A

### Precision casting

*See* Investment casting

### Preferrential attack (corrosion)

*See* Intergranular corrosion

### Preferrential orientation, Deformation effects

Preferred Orientations in Extruded Nickel and Iron Aluminides. 279-288A

Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing. 3001-3010A

*See also* Preferred orientation

### Press forging

Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel. 1969-1987A

### Pressing

*See* Hot pressing

### Pressure

*See* Contact pressure

### Pressure casting

Interaction of  $Al_2O_3—ZrO_2$  Fibers With a  $Ti—Al$  Matrix During Pressure Casting. 213-219A

Microstructure of a Pressure-Cast  $Fe_3Al$  Intermetallic Alloy Composite Reinforced With Zirconia-Toughened Alumina Fibers. 2881-2889A

### Pressure die casting

*See* Die casting

### Pressure molding

*See* Injection molding

## Reactions (chemical)

<b>Pressure sintering</b> <i>See</i> Hot pressing			
<b>Pressure vessels, Corrosion</b> An Investigation of Environmental Effects on Fatigue Crack Growth in Q1N (HY80) Steel.	2977-2983A		
<b>Pressure vessels, Welding</b> Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferritic Steel.	2021-2036A		
<b>Pressure welding</b> <i>See</i> Diffusion welding			
<b>Pressureless sintering</b> <i>See</i> Loose powder sintering			
<b>Prestraining</b> Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.	717-724A		
Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on Bauschinger Effect and Residual Phase Stresses.	725-732A		
Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A		
<b>Process control</b> The Effects of Lead on the Electrochemical and Adhesion Behavior of Zinc Electrodeposits.	81-86B		
Optimal Control of an Aluminum Casting Furnace. I. The Control Model.	487-494B		
Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.	495-500B		
<b>Process metallurgy</b> <i>See</i> Extractive metallurgy			
<b>Propagation</b> <i>See</i> Crack propagation			
<b>Properzi process</b> <i>See</i> Continuous casting			
<b>Prosthetics, Heat treatment</b> Plasma Source Nitrogen Ion Implantation of Ti—Al—V.	1663-1667A		
<b>Protective coatings</b> Interface Stability in the Ni—Cr—Al System. I. Morphological Stability of $\beta$ — $\gamma$ Diffusion Couple Interfaces at 1150°C.	1901-1910A		
Interface Stability in the Ni—Cr—Al System. II. Morphological Stability of $\beta$ -Ni50Al vs. $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.	1911-1919A		
<b>Protective coatings, Mechanical properties</b> The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A		
<b>Puddling</b> <i>See</i> Ironmaking			
<b>Pulse echo technique</b> <i>See</i> Ultrasonic testing			
<b>Puncturing</b> <i>See</i> Piercing			
<b>Purification</b> Purification of Tin by Zone Refining With Development of a New Model.	455-461B		
<b>Pyroceram</b> <i>See</i> Ceramics			
<b>Pyrolysis</b> Modeling of Materials Synthesis in Hybrid Plasma Reactors: Production of Silicon by Thermal Decomposition of SiCl <sub>4</sub> .	589-598B		
<b>Pyrometers</b> <i>See</i> Radiation pyrometers			
<b>Pyrometry</b> Pyrometric Measurement of Dust-Laden Gas Temperature.	27-35B		
<b>Quantitative analysis</b> The Tempering of Iron—Nitrogen Martensite; Dilatometric and Calorimetric Analysis.	13-26A		
<b>Quantitative metallography</b> High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation.	853-858A		
The Incomplete Transformation Phenomenon in Fe—C—Mo Alloys.	1433-1463A		
<b>Quasicrystalline structure, Heating effects</b> Phase Formation in Electrodeposited and Thermally Annealed Al—Mn Alloys.	2869-2879A		
<b>Quench hardening</b> <i>See</i> Austempering			
<b>Quenching (cooling)</b> <i>See also</i> Quenching and tempering Water quenching Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon (~ 0.20 wt.%) Steels.	3153-3164A		
<b>Quenching and tempering</b> Observation of an Adiabatic Shear Band in AISI 4340 Steel by High-Voltage Transmission Electron Microscopy.	707-716A		
Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon (~ 0.20 wt.%) Steels.	3153-3164A		
<b>Quenching stresses</b> <i>See</i> Residual stress			
<b>Radiation damage</b> Swelling Behavior of U—Pu—Zr Fuel.	517-528A		
Radiation Effects in High-Temperature Superconductors: a Brief Review.	1015-1019A		
<b>Unified Theoretical Analysis of Experimental Swelling Data for Irradiated Austenitic and Ferritic/Martensitic Alloys. Radiation Effects on Time-Dependent Deformation, Creep and Growth.</b>			1021-1035A
<b>Contributions From Research on Irradiated Ferritic/Martensitic Steels to Materials Science and Engineering. Amorphization in Zr<sub>3</sub>Al Irradiated With 1 MeV e<sup>—</sup> and Kr<sup>+</sup>. Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.</b>			1053-1063A
<b>Sm—Co Permanent Magnets: Effects of Fast Neutron Irradiation.</b>			1065-1071A
<b>Modeling Dislocation Evolution in Irradiated Alloys. The Effect of Oxygen on Void Stability in Ion-Irradiated Steel. Experimental Studies of U—Pu—Zr Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II. Fuel Constituent Redistribution During the Early Stages of U—Pu—Zr Irradiation.</b>			1799-1808A
<b>Radiation pyrometers</b> Pyrometric Measurement of Dust-Laden Gas Temperature.		27-35B	
<b>Radiocrytallography</b> <i>See</i> Crystallography			
<b>Rail steels, Mechanical properties</b> Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlite Steels.			925-933A
<b>Raney nickel</b> <i>See</i> Catalysts			
<b>Rapid solidification</b> Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.			69-80A
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. II. Crack Opening Profile.			81-86A
Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys.			205-212A
Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys".			205-212A
Modeling of Microsegregation Under Rapid Solidification Conditions.			260-263A
Fatigue Crack Propagation in a Rapidly Solidified Al—12.4Fe—1.2V—2.3Si Alloy.			499-500A
Microscopy and Tensile Behavior of Melt-Spun Ni—Al—Fe Alloys.			959-970A
A Mathematical Model for Metal Flow and Heat Transfer in Centrifugal Melt Spinning.			1063-1073B
Decomposition and Dissolution Kinetics of $\delta$ Precipitation in Al—Li Binary Alloys.			1133-1141A
Phase Transitions in Rapidly Solidified Stainless Steel Cathodically Hydrogen Charged.			1251-1259A
Extended Al(Mn) Solution in a Rapidly Solidified Al—Li—Mn—Zr Alloy.			1785-1789A
Effect of Cerium Content on the Deformation Behavior of Rapidly Solidified Al—Fe—Ce Alloys.			2155-2158A
Studies of Carbides in a Rapidly Solidified High-Speed Steel.			3021-3026A
<b>Rare earth compounds</b> <i>See</i> Dysprosium compounds Samarium compounds Terbium compounds			
<b>Rare earth metals</b> <i>See</i> Cerium Neodymium			
<b>Rates</b> <i>See</i> Cooling rate Erosion rate Oxidation rate Strain rate			
<b>Reaction kinetics</b> Kinetic Study on the Reaction of Solid Silica With Molten $Mg_2$ .			19-25B
Mathematical Modeling of Exothermic Leaching Reaction System: Pressure Oxidation of Wide Size Arsenopyrite Particles.			827-837B
Interaction Behavior of Nitrogen in Liquid Niobium.			845-853B
A Kinetic Model of the $\gamma \rightarrow \alpha + G$ Eutectoid Transformation in Spheroidal Graphite Cast Irons.			913-918A
Mathematical Modeling of Sulfide Flash Smelting Process. I. Model Development and Verification With Laboratory and Pilot Plant Measurements for Chalcopyrite Concentrate Smelting.			945-958B
Mathematical Modeling of Sulfide Flash Smelting Process. II. Quantitative Analysis of Radiative Heat Transfer.			959-966B
Bainite Viewed Three Different Ways.			1343-1380A
Overall Reaction Kinetics and Morphology of Austenite Decomposition Between the Upper Nose and the $M_s$ of a Hypoeutectoid Fe—C—Cr Alloy.			1465-1478A
<b>Reaction kinetics, Alloying effects</b> The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe—C—Ti Alloys.			1509-1515A
The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe—C—Si—Mn Alloys.			1517-1525A
<b>Reactions (chemical)</b> <i>See also</i> Catalysis Combustion Denitration Deoxidizing Dephosphorizing Desilicizing Desulfurizing Dissolution Electrolysis Exothermic reactions Interface reactions Oxidation			

## Reactions (chemical)

Study of Chloridizing Volatilization Roasting of Cinnabar as a Basis for a Process to Obtain Mercuric and Mercurous Chlorides.	259-268B	Replicast process See Investment casting
Continuous Precipitation of Uranium With Hydrogen Peroxide.	819-826B	Research Leveraging Federal Research and Development for United States Science and Technology.
The Effect of the Elemental Sulfur Reaction Product on the Leaching of Galena in Ferric Chloride Media.	935-943B	Leveraging Federal Research and Development for United States Science and Technology.
Displacement Reactions During Mechanical Alloying.	2789-2794A	2617-2636A
<b>Reactivity (chemical)</b>		<b>Residual stress</b>
See Activity (chemical)		Bauschinger Effect and Residual Phase Stresses in Two-Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.
<b>Reactor fuels</b>		Bauschinger Effect and Residual Phase Stresses in Two-Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on Bauschinger Effect and Residual Phase Stresses.
See Nuclear fuels		Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.
<b>Reactor vessels (nuclear)</b>		A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.
See Nuclear reactors		Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.
<b>Reactors</b>		Residual stress, Corrosion effects Phase Transitions in Rapidly Solidified Stainless Steels Cathodically Hydrogen Charged.
See Nuclear reactors		Residual stress, Heating effects Development and Relaxation of Stress in Surface Layers; Composition and Residual Stress Profiles in $\gamma$ -Fe <sub>2</sub> N <sub>1-x</sub> Layers on $\alpha$ -Fe Substrates.
<b>Recovery</b>		Residual stress, Microstructural effects Composite Ferrous Powder Metallurgy Structures: Mechanical Properties and Stress Analysis.
Subgrain Growth in Nickel During Recovery.	500-503A	Residual stress, Radiation effects Residual Grain-Interaction Stresses in Zirconium Alloys.
Interface Migration During Recrystallization: The Role of Recovery and Stored Energy Gradients.	1143-1149A	1083-1095A
<b>Recovery, Deformation effects</b>		Resistance See Corrosion resistance
Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.	1969-1987A	Resistance welds See Welded joints
<b>Recovery, Heating effects</b>		Resistivity Precipitation Reactions and Strengthening Behavior in 18 wt.% Nickel Maraging Steels.
Positron Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing.	2037-2045A	2655-2668A
<b>Recrystallization</b>		Resonance testing See Ultrasonic testing
See also Grain refinement Secondary recrystallization		Retained austenite Effect of Prior Austenitic Grain Size on Stress Corrosion Cracking of a High-Strength Steel.
Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.	153-164A	503-505A
Subgrain Growth in Nickel During Recovery.	500-503A	Retained austenite, Deformation effects Improvement in Toughness of Fe-Cr-Mn-C Steels by Thermal-Mechanical Treatments.
Interface Migration During Recrystallization: The Role of Recovery and Stored Energy Gradients.	1143-1149A	683-695A
Early Stages of Recrystallization in Nickel.	2215-2221A	Retained austenite, Heating effects Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: the Clustering-Ordering Synergy.
<b>Recrystallization, Deformation effects</b>		Revolapration See Vaporizing
Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.	1969-1987A	Reverberatory furnaces The Activity Coefficients of Oxygen in Ni-S and Co-S Melts.
<b>Rectification (distillation)</b>		Reviews Advanced Materials and Competitiveness.
See Distillation		Competitive Solvation and Complexation of Cu(I), Cu(II), Pb(II), Zn(II), and Ag(I) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide Solutions Containing Chloride Ion With Applications to Hydrometallurgy.
<b>Red hardness</b>		Bainite in Steels.
See Hardness		Leveraging Federal Research and Development for United States Science and Technology.
<b>Reduction</b>		A Perspective on the Morphology of Bainite.
See Reduction (chemical)		Radiation Effects in High-Temperature Superconductors: a Brief Review.
Reduction (electrolytic)		Unified Theoretical Analysis of Experimental Swelling Data for Irradiated Austenitic and Ferritic/Martensitic Alloys.
See also Electroreducing Equilibrium Between Ferrous and Ferric Chlorides in Molten Chloride Salts.	131-133B	Effect of Oxygen on Vacancy Cluster Morphology in Metals.
<b>Refining</b>		Radiation Effects on Time-Dependent Deformation: Creep and Growth.
See Electrorefining		Contributions From Research on Irradiated Ferritic/Martensitic Steels to Materials Science and Engineering.
<b>Refractories</b>		Radiation as a Tool in Understanding Phase Transformations.
On the Evaluation of Stability of Rare Earth Oxides as Face Coats for Investment Casting of Titanium.	559-566B	Review of Small Specimen Test Techniques for Irradiation Testing.
<b>Refractory alloys</b>		Positron Spectroscopy for Materials Characterization.
See Chromium base alloys		Applications of Solid Electrolytes in Thermodynamic Studies of Materials: a Review.
Niobium base alloys		Advanced Materials and Competitiveness.
Tantalum base alloys		Bainite Viewed Three Different Ways.
Tungsten base alloys		A Mechanism for the Formation of Lower Bainite.
<b>Refractory materials</b>		Influence of Carbon Concentration and Reaction Temperature Upon Bainite Morphology in Fe-C-2Mn Alloys.
See Refractories		Growth and Overall Transformation Kinetics Above the Bay Temperature in Fe-C-Mo Alloys.
<b>Refractory metal compounds</b>		The Incomplete Transformation Phenomenon in Fe-C-Mo Alloys.
See Niobium compounds		Overall Reaction Kinetics and Morphology of Austenite Decomposition Between the Upper Nose and the M <sub>3</sub> of a Hypoeutectoid Fe-C-Cr Alloy.
Rhenium compounds		An Investigation of the Generality of Incomplete Transformation to Bainite in Fe-C-X Alloys.
Vanadium compounds		Structure-Property Relationships in Bainitic Steels.
<b>Refractory metals</b>		
See Chromium		
Molybdenum		
Niobium		
Tantalum		
Tungsten		
Vanadium		
<b>Relaxation</b>		
See also Stress relaxation		
Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A	
<b>Remanence, Radiation effects</b>		
Sm-Ce Permanent Magnets: Effects of Fast Neutron Irradiation.	1817-1821A	
<b>Renn furnace</b>		
See Direct reduction		

<b>Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Based Alloys.</b>	1627-1643A	<b>Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.</b>	1151-1159A
<b>Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.</b>	1809-1815A	<b>Sag</b> Image Analysis for Grain Shape Characterization in Lamp Furnaces.	2209-2214A
<b>On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.</b>	2339-2354A	<b>Saline water</b> See Salt water	
<b>Crystallographic and Mechanistic Aspects of Growth by Shear and by Diffusional Processes.</b>	2369-2409A	<b>Salt roasting</b> See Chlorinating	
<b>Leveraging Federal Research and Development for Unit 4 States Science and Technology.</b>	2617-2636A	<b>Salt water, Environment</b> Fatigue Threshold and Low-Rate Crack Propagation Properties for Structural Steels in 3% Sodium Chloride Aqueous Solution.	2189-2199A
<b>Rhenium compounds, Mechanical properties</b>	1951-1957A	An Investigation of Environmental Effects on Fatigue Crack Growth in Q1N (HY80) Steel.	2977-2983A
<b>Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.</b>		<b>Samarium compounds, Irradiation</b> Sm—Co Permanent Magnets: Effects of Fast Neutron Irradiation.	1817-1821A
<b>Rheocasting</b> The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	183-190B	<b>Sand casting</b> See CO <sub>2</sub> mold casting	
<b>Rheological properties</b> See Viscosity		<b>Sapphire, Composite materials</b> The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	1745-1751A
<b>Rimming steels, Metal working</b> <i>Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to l = 12 and Their Use for the On-Line Prediction of r-Value.</i>	697-706A	<b>Saturation (magnetic), Heating effects</b> Modulated Structure and Magnetic Properties of Age-Hardenable Fe—Mn—Al—C Alloys.	5-11A
<b>Rimming steels, Rolling</b> Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.	331-343A	<b>Saturation magnetization</b> See Saturation (magnetic)	
<b>Rings, Mechanical properties</b> Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.	529-538A	<b>Scanning electron microscopy</b> Image Analysis for Grain Shape Characterization in Lamp Furnaces.	2209-2214A
<b>Risering</b> See Gating and risering	259-268B	<b>Scanning transmission electron microscopy</b> See Scanning electron microscopy	
<b>Roasting</b> Study of Chlorinating Volatilization Roasting of Cinnabar as a Basis for a Process to Obtain Mercuric and Mercurous Chlorides.		<b>Schottky defect</b> See Lattice vacancies	
<b>Roll piercing</b> See Piercing		<b>Scorification</b> See Fluxing	
<b>Rolling</b> See Cold rolling Controlled rolling Hot rolling Rolling direction Tube rolling		<b>Seamless tubes, Rolling</b> Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.	153-164A
<b>Rolling contact</b> The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels.	653-665A	<b>Season cracking</b> See Stress corrosion cracking	
<b>Rolling Contact Fatigue and Fatigue Crack Propagation in 1C—1.5Cr Bearing Steel in the Bainite Condition.</b>	889-893A	<b>Secondary recrystallization, Microstructural effects</b> Effects of the Amount of $\gamma'$ and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Based Superalloys.	547-555A
<b>Rolling Contact Deformation, Etching Effects, and Failure of High-Strength Bearing Steel.</b>	1921-1931A	<b>Seeding</b> See Nucleation	
<b>Rolling direction</b> Stereoscopic Presentation of Rodrigues Vector Representation of the Full Three-Dimensional Disorientation of Iron Crystals by Rolling.	253-255A	<b>Segregations</b> Conservation of Mass and Momentum for the Flow of Interdendritic Liquid During Solidification.	173-181B
<b>Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.</b>	331-343A	Dendrite Arm Climb by Temperature Gradient Zone Melting During Solidification of a High-Speed Tool Steel.	264-266A
<b>Rolling Contact Deformation, Etching Effects, and Failure of High-Strength Bearing Steel.</b>	2985-3000A	Mathematical Modeling of Microsegregation in Binary Metallic Alloys.	357-375B
<b>Rolling texture</b> Stereoscopic Presentation of Rodrigues Vector Representation of the Full Three-Dimensional Disorientation of Iron Crystals by Rolling.	253-255A	Effect of Prior Austenitic Grain Size on Stress Corrosion Cracking of a High-Strength Steel.	503-505A
<b>Measurement and Prediction of Plastic Anisotropy in Deep-Drawing Steels.</b>	331-343A	Modeling of Micro—Macrosegregation in Solidification Processes.	749-753A
<b>Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to l = 12 and Their Use for the On-Line Prediction of r-Value.</b>	697-706A	The Distribution of Substitutional Alloying Elements During the Bainite Transformation.	837-844A
<b>Development of Ferrite Rolling Textures in Low- and Extra Low-Carbon Steels.</b>		Modeling of Solidification Microstructures in Concentrated Solidifying and Intermetallic Systems.	1311-1318A
<b>Rotary kilns</b> See Kilns		Deuterium Surface Segregation in Titanium Alloys.	2003-2007A
<b>Rotary press forging</b> See Press forging		Infiltration of Fiber Preforms by a Binary Alloy. I. Theory.	2059-2072A
<b>Roughing (rolling)</b> See Hot rolling		On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A
<b>Roughness</b> Spangle Formation in Galvanized Sheet Steel Coatings.	549-558B	High-Resolution Auger Electron Spectroscopy of Grain Boundary Phosphorus Segregation in NiCrMoV and NiCr Steels.	2817-2821A
A General Method for Estimation of Fracture Surface Roughness. I. Theoretical Aspects.	1193-1199A	Lattice Changes of Iron—Nitrogen Martensite on Aging at Room Temperature.	2857-2867A
A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	1201-1207A	<b>Segregations, Alloying effects</b> A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.	697-706B
Corrigenda and Comments on the Infiltration of Fiber Preforms.	2287A	<b>Segregations, Cooling effects</b> Modeling of Microsegregation Under Rapid Solidification Conditions.	260-263A
<b>Rupture strength</b> See Creep rupture strength		A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.	479-488A
<b>Ruthenium, Powder technology</b> Nanocrystalline Metals Prepared by High-Energy Ball Milling.	2333-2337A	Structure of Continuously Cooled Low-Carbon Vanadium Steels.	2839-2855A
<b>Ruthenium compounds, Mechanical properties</b> Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A	<b>Segregations, Deformation effects</b> The Boron Hardenability Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels.	1697-1708A
<b>S-N diagrams</b> Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlite Steels.	925-933A	<b>Segregations, Heating effects</b> The Tempering of Iron—Nitrogen Martensite; Dilatometric and Calorimetric Analysis.	13-26A
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A	<b>Segregations, Radiation effects</b> Radiation as a Tool in Understanding Phase Transformations.	1073-1082A

## Self diffusion

<b>Self diffusion</b>	
See Diffusion	
<b>Semiconductors</b>	
See Gallium arsenide	
Germanium	
Silicon	
<b>Semicontinuous casting</b>	
See Continuous casting	
<b>Semikilling</b>	
See Deoxidizing	
<b>Sendzimir process</b>	
See Zinc plating	
<b>Sensible heat</b>	
See Enthalpy	
<b>Sensitivity</b>	
See Notch sensitivity	
<b>Sensitizing</b>	
The Effects of Cathodic Charging on the Acoustic Emission Generated by Intergranular Cracking in Sensitized 304 Stainless Steel.	1933-1939A
<b>Separation</b>	
See Degassing	
Depletion	
Distillation	
Extraction	
Slagging	
<b>Shaft kilns</b>	
See Kilns	
<b>Shape</b>	
See Sag	
<b>Shape memory alloys, Heat treatment</b>	
Composition Dependence of Aging Kinetics in Some Cu-Zn-Al Shape Memory Alloys.	1681-1688A
<b>Shape memory alloys, Mechanical properties</b>	
Effects on Microstructure and Tensile Properties of a Zirconium Addition to a Cu-Al-Ni Shape Memory Alloy.	741-744A
<b>Shaping</b>	
See Near net shaping	
<b>Shear modulus</b>	
Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2521-2530A
<b>Shear properties</b>	
See also Shear modulus	
Mixed Mode I/II/III Fracture Toughness of an Experimental Rotor Steel.	2539-2545A
<b>Sheet metal, Coating</b>	
Spangle Formation in Galvanized Sheet Steel Coatings.	549-558B
<b>Sheet steel</b>	
See Strip steel	
<b>Sherritt Gordon process</b>	
See Extraction	
Hydrometallurgy	
<b>Shielded arc welding</b>	
See Gas metal arc welding	
<b>Shock waves</b>	
Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.	1589-1593A
<b>Short arc welding</b>	
See Gas metal arc welding	
<b>Short range order</b>	
Thermodynamic Study and the Phase Diagram of the Mg-Sn System.	707-714B
Microstructure, Crystallization, and Coercivity of Rare Earth-Iron-Boron Amorphous Alloy Ribbons.	2805-2814A
Computer Simulation Study of Short-Range Order Hardening.	3165-3169A
<b>Sigma hard facing</b>	
See Gas metal arc welding	
<b>Sigma welding</b>	
See Gas metal arc welding	
<b>Silica</b>	
See Silicon dioxide	
<b>Silicates</b>	
A Model for Silicate Melts.	404-406B
<b>Silicides, Microstructure</b>	
Twin Boundaries in Cs <sub>4</sub> -TiSi <sub>2</sub> .	2317-2322A
<b>Silicon, Alloying elements</b>	
The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe-C-Ti Alloys.	1509-1515A
The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe-C-Si-Mn Alloys.	1517-1525A
Effect of Silicon Addition on the Microstructure of an Fe-8.0Al-29.0Mn-0.9C Alloy.	1891-1899A
<b>Silicon, Dopeants</b>	
The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire.	919-923A
<b>Silicon, Ternary systems</b>	
The Ag-Au-Si System: Experimental and Calculated Phase Diagram.	1877-1884A
<b>Silicon carbide, Composite materials</b>	
The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.	231-239A
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates.	401-410A
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.	411-420A
The Infiltration of Aluminum Into Silicon Carbide Compacts. Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	475-485B
Reaction Zone Microstructure in a Ti <sub>3</sub> Al + Nb/SiC Composite.	673-682A
A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.	1559-1569A
The Effect of Matrix Reinforcement Reaction on Fracture in Ti-6Al-4V-Based Composites.	1571-1578A
Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.	1579-1587A
Thermal Fatigue of Ti-24Al-11Nb/SCS-6.	1589-1593A
Crack Path Morphology in Silicon Carbide Whisker-Reinforced Aluminum Composite.	1595-1602A
Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	1783-1785A
Some Observations on the High-Temperature Creep Behavior of 6061 Al-SiC Composites.	2073-2082A
Microscopic Examination of the Interface Region in 6061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.	2089-2090A
Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.	2489-2496A
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	2701-2707A
High-Temperature Interactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.	2747-2757A
<b>Silicon compounds</b>	
See also Silicon	
Silicides	
Silicon carbide	
Silicon dioxide	
<b>Silicon compounds, Mechanical properties</b>	
Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A
Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2709-2715A
Mechanical Properties of AlNb and Other High-Temperature Intermetallic Compounds.	3063-3074A
<b>Silicon dioxide, Binary systems</b>	
An Assessment of the CaO-SiO <sub>2</sub> System.	303-312B
<b>Silver, Composite materials</b>	
High T <sub>c</sub> Composite Silver/Oxide Superconductors.	257-260A
<b>Silver, Extraction</b>	
A Rotating Disk Study of Silver Dissolution With Thiourea in the Presence of Ferric Sulfate.	419-427B
The Effect of Concentration and Temperature on Diffusivity of Metal Compounds.	429-438B
Competitive Solvation and Complexation of Cu(I), Cu(II), Pb(II), Zn(II), and Ag(II) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide Solutions Containing Chloride Ion With Applications to Hydrometallurgy.	439-448B
<b>Silver, Mechanical properties</b>	
Estimation of the Yield Strength of Metals From Crystal Defect Energies.	1719-1723A
<b>Silver, Microstructure</b>	
Interface Characterization of Epitaxial Silver Films on Si(100) and Si(111) Grown by Molecular Beam Epitaxy.	2323-2332A
<b>Silver, Ternary systems</b>	
The Ag-Au-Si System: Experimental and Calculated Phase Diagram.	1877-1884A
<b>Silver-base alloys, Microstructure</b>	
Modeling of Microsegregation Under Rapid Solidification Conditions.	260-263A
<b>Silver-base alloys, Phase transformations</b>	
On Bainite Formation.	811-816A
<b>Silver-base alloys, X-ray analysis</b>	
An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Cu-12Zn-Sn and Ag-12Zn-Sn Alloys: Role of 1 wt% Zn.	1319-1322A
An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Ag-1Sn-Zn Alloys: Role of 1 wt% Sn.	1327-1330A
<b>Simulation</b>	
See also Computer simulation	
Analysis of Early-Stage Sintering With Simultaneous Surface and Volume Diffusions.	305-312A
Simulation of Fluid Flow Inside a Continuous Slab-Casting Machine.	387-400B
Influence of Test Parameters on the Thermal-Mechanical Fatigue Behavior of a Superalloy.	389-399A
Purification of Tin by Zone Refining With Development of a New Model.	455-461B
Slopping Resulting From Gas Injection in a Peirce-Smith Converter: The Period of the Standing Wave.	657-664B
Modeling of Micro-Macrosegregation in Solidification Processes.	749-753A
Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B
Blast Furnace On-Line Simulation Model.	913-923B
Slopping Resulting From Gas Injection in a Peirce-Smith Converter: Water Modeling.	987-996B

<b>The Development of Solidification Microstructures in the Presence of Lateral Constraints.</b>	1299-1310A	<b>Slags, Solubility</b>	
Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferritic Steel.	2021-2036A	Nitrogen Solubility in $\text{CaO}-\text{SiO}_2$ , $\text{CaO}-\text{MgO}-\text{SiO}_2$ , and $\text{BaO}-\text{MgO}-\text{SiO}_2$ Melts.	97-104B
<b>Development of Orientation Coherence in Plane-Strain Deformation.</b>	2223-2236A	Nitrogen Solubility in $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Melts.	105-109B
Atomic Structure and Energy of $\Sigma = 5$ Tilt Boundaries in Gold.	2299-2307A	Nitrogen Solution in $\text{BaO}-\text{B}_2\text{O}_3$ and $\text{CaO}-\text{B}_2\text{O}_3$ Slags.	1025-1032B
Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.	2795-2804A		
<b>Single crystals, Coating</b>		<b>Sliding contacts</b>	
The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A	See Electric contacts	
<b>Single crystals, Composite materials</b>		<b>Slime</b>	
Fiber and Interface Fracture in Single-Crystal Aluminum/SiC Fiber Composites.	2747-2757A	Electrometallurgy of Copper Refinery Anode Slimes.	629-635B
<b>Single crystals, Corrosion</b>		<b>Slime, Refining</b>	
The Acceleration Mechanism of Stress on Anodic Dissolution of Bare Metal Surface.	3260-3264A	A Mineralogical Overview of the Behavior of Nickel During Copper Electrosurfacing.	229-238B
<b>Single crystals, Crystal growth</b>		<b>Slings casting</b>	
Interface Migration During Recrystallization: the Role of Recovery and Stored Energy Gradients.	1143-1149A	See Centrifugal casting	
<b>Single crystals, Mechanical properties</b>		<b>Slip</b>	
Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped $\text{Ni}_{78}\text{Al}_{19}\text{Ti}_3$ Single Crystals.	107-115A	See also Slip planes	
High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy MA 956.	353-384A	Crack Tip Behaviors of Stationary and Growing Cracks in $\text{Al}-\text{Fe}-\text{X}$ Alloys. I. Near-Tip Strain Field.	69-80A
Influence of Molybdenum on the Creep Properties of Nickel-Based Superalloy Single Crystals.	381-388A	Crack Tip Behaviors of Stationary and Growing Cracks in $\text{Al}-\text{Fe}-\text{X}$ Alloys. II. Creep Strain Profile.	81-86A
Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.	2169-2177A	The Flow and Fracture of a $\text{TiAl}-\text{Nb}$ Alloy.	135-143A
<b>Single crystals, Microstructure</b>		Deformation Structure in a $\text{Ti}-24\text{Al}-11\text{Nb}$ Alloy.	627-639A
Interface Characterization of Epitaxial Silver Films on $\text{Si}(100)$ and $\text{Si}(111)$ Grown by Molecular Beam Epitaxy.	2323-2332A	Application of the Double-Shear Theory of Martensite Crys-tallography to the $\beta \rightarrow \alpha$ Transformation in an $\text{U}(\text{Ga})$ Alloy.	2131-2136A
Stress Gradients and Extent of Slip in Alpha Brass.	3075-3084A	Dislocation Structures Ahead of Advancing Cracks.	2411-2417A
<b>Single crystals, Phase transformations</b>		Intergranular Fracture by Slip/Grain Boundary Interaction.	2431-2436A
An In Situ Scanning Electron Microscope Kossel X-Ray Diffraction Study of the Elastic Aftereffect in a Ferroelastic Alloy.	2599-2601A	An In Situ Transmission Electron Microscope Deformation Study of the Slip Transfer Mechanisms in Metals.	2437-2447A
<b>Single crystals, Surface finishing</b>		Stress Gradients and Extent of Slip in Alpha Brass.	3075-3084A
Positron Annihilation Study of Dislocations Produced by Polishing in the Surface of Iron Single Crystals. I. Density Profile and Removal by Annealing.	2037-2045A	Large-Strain Bauschinger Effects in FCC Metals and Alloys.	3201-3213A
<b>Single crystals, Welding</b>		<b>Slip, Cooling effects</b>	
Microstructure of Stainless Steel Single-Crystal Electron Beam Welds.	1753-1766A	Microscopy and Tensile Behavior of Melt-Spun $\text{Ni}-\text{Al}-\text{Fe}$ Alloys.	959-970A
Analysis of Solidification Microstructures in $\text{Fe}-\text{Ni}-\text{Cr}$ Single-Crystal Welds.	1767-1782A	<b>Slip, Deformation effects</b>	
<b>Sintered compacts, Mechanical properties</b>		Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.	3215-3220A
Matrix Composition Effects on the Tensile Properties of Tungsten—Molybdenum Heavy Alloys.	1325-1327A	<b>Slip, Heating effects</b>	
Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.	2531-2538A	Effect of Metallurgical Parameters on Shear Band Formation in Low-Carbon ( $\sim 0.20$ wt.%) Steels.	3153-3164A
<b>Sintered compacts, Microstructure</b>		<b>Slip, Stress effects</b>	
Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering.	2935-2941A	Characterization of the Tip Field of a Discrete Dislocation Pile-Up for the Development of Physically Based Micromechanics.	2087-2089A
<b>Sintering</b>		<b>Slip planes</b>	
See also Sintering (powder metallurgy)		Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped $\text{Ni}_{78}\text{Al}_{19}\text{Ti}_3$ Single Crystals.	107-115A
Study of Moisture Transfer During the Strand Sintering Process.	37-47B	Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.	1151-1159A
<b>Sintering (powder metallurgy)</b>		Microscopic Observations of Adiabatic Shear Bands in Three Different Steels.	1161-1175A
See also Liquid phase sintering		Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.	2201-2208A
Liquid powder sintering		<b>Slip planes, Heating effects</b>	
Analysis of Early-Stage Sintering With Simultaneous Surface and Volume Diffusions.	305-312A	Observation of an Adiabatic Shear Band in AISI 4340 Steel by High-Voltage Transmission Electron Microscopy.	707-716A
Degree of Pore-Grain Boundary Contact During Sintering.	2137-2139A	<b>Slurries</b>	
Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.	2531-2538A	The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	183-190B
<b>Skull casting</b>		<b>Smelting</b>	
See Casting		See also Flash smelting	
<b>Slab casting</b>		Kinetic Study on the Reaction of Solid Silica With Molten Matte.	19-25B
Simulation of Fluid Flow Inside a Continuous Slab-Casting Machine.	387-400B	A Thermodynamic Study of the Carbothermic Reduction of Alumina in Plasma.	406-408B
<b>Slagging</b>		Viscosities and Activities in Lead-Smelting Slags.	501-510B
Thermodynamics of Nitrogen in $\text{Ca}-\text{CaF}_2$ Slags.	205-207B	The Activity Coefficients of Oxygen in $\text{Ni}-\text{S}$ and $\text{Co}-\text{S}$ Melts.	529-536B
Influence of Additives on Sulfide Capacity of $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Slags.	1081-1084B	Distribution of Niobium or Tantalum Between Fluorine-Containing Slag and Iron in Blast Furnace Smelting.	873-878B
<b>Slags</b>		Removal of Antimony From Copper by Injection of Soda Ash.	967-975B
See also Blast furnace slags		<b>SN diagrams</b>	
Kinetic Study on the Reaction of Solid Silica With Molten Matte.	19-25B	See S-N diagrams	
The Dependence of the Oxidation State of Vanadium on the Oxygen Pressure in Melts of $\text{VO}_x$ , $\text{Na}_2\text{O}-\text{VO}_x$ , and $\text{CaO}-\text{SiO}_2-\text{VO}_x$ .	111-120B	<b>Sodium aluminum fluoride</b>	
Sulfide Capacity of $\text{CaO}-\text{CaF}_2-\text{SiO}_2$ Slags.	121-129B	See Cryolite	
Deuterium Exchange Studies of the Interfacial Rate of Reaction of Water Vapor With Silica-Saturated Iron Silicate Melts.	511-519B	<b>Soft annealing</b>	
Gibbs Energies of Formation of Intermetallic Phases in the Systems $\text{Pt}-\text{Mg}$ , $\text{Pt}-\text{Ca}$ , and $\text{Pt}-\text{Ba}$ and Some Applications.	521-527B	See Annealing	
Kinetics of the Dissolution of Zinc Sulfide in an Oxidizing Slag.	867-872B	<b>Softening</b>	
An Assessment of the $\text{Ca}-\text{Fe}-\text{O}$ System.	2759-2776A	See also Strain softening	
<b>Slags, Recovering</b>		Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.	717-724A
Fuming of Stannous Oxide From Silicate Melts.	449-454B	Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on the Bauschinger Effect and Residual Phase Stresses.	725-732A
		Microscopic Observations of Adiabatic Shear Bands in Three Different Steels.	1161-1175A
<b>Slags, Recovering</b>		<b>Softening, Heating effects</b>	
Fuming of Stannous Oxide From Silicate Melts.		Tempering of Steel During Laser Treatment.	987-995A
<b>Solid solubility</b>		<b>Solid solubility</b>	
Extended $\text{Al}(\text{Mn})$ Solution in a Rapidly Solidified $\text{Al}-\text{Li}-\text{Mn}-\text{Zr}$ Alloy.		See $\text{Al}(\text{Mn})$ Solution in a Rapidly Solidified $\text{Al}-\text{Li}-\text{Mn}-\text{Zr}$ Alloy.	1785-1789A
<b>Solid solutions, Mechanical properties</b>		<b>Solid solutions, Mechanical properties</b>	
Creep Behavior of Nickel—Copper Solid Solution Alloys Below $0.55 \text{ T}_m$ .		Creep Behavior of Nickel—Copper Solid Solution Alloys Below $0.55 \text{ T}_m$ .	2601-2605A

## Solid solutions

### Solid solutions, Phase transformations

Analysis of the Composition of  $\alpha$  Plates Isothermally Formed in Titanium Binary Alloys.

1547-1556A

### Solidification

See also Directional solidification

Rapid solidification

Coarsening in Binary Solid-Liquid Mixtures.

Dendrite Arm Climb by Temperature Gradient Zone Melting During Solidification of a High-Speed Tool Steel.

Mathematical Modeling of Microsegregation in Binary Metallic Alloys.

A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.

Modeling Stress Development During the Solidification of Gray Iron Castings.

A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe-Ni-S, Fe-Ni-P, and Fe-Ni-Al Alloys.

Modeling of Feeding Behavior of Solidifying Al-7Si-0.3Mg Alloy Plate Casting.

Solidification in the System Al-Ge-Si: the Phase Diagram, Casting Patterns, Eutectic Growth, and Modification.

Modeling of Micro-Macrosegregation in Solidification Processes.

Heat Transfer-Solidification Kinetics Modeling of Solidification of Castings.

Analysis of Solidification Microstructures in Fe-Ni-Cr Single-Crystal Welds.

Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.

### Solubility

See also Solid solubility

Discussion of "Comments on the Solubility of Carbon in Molten Aluminum".

Solubility of Uranous Sulfate in Aqueous Sulfuric Acid Solution.

Interaction Behavior of Nitrogen in Liquid Niobium.

Nitrogen Solution in BaO-B<sub>2</sub>O<sub>3</sub> and CaO-B<sub>2</sub>O<sub>3</sub> Slags.

255-257A

839-844B

845-853B

1025-1032B

### Solubility, Microstructural effects

Effect of Pearlite Morphology on Hydrogen Permeation, Diffusion, and Solubility in Carbon Steels.

3257-3258A

### Solution annealing

Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690.

2097-2107A

### Solution hardening

See Solution strengthening

### Solution heat treatment

See also Solution annealing

Lithium Diffusion in Aluminum—Lithium Alloy 2090 Clad With 7072.

Effects of Cooling Rate and  $\gamma'$  Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.

1709-1717A

### Solution strengthening

Creep Behavior of Nickel-Copper Laminate Composites With Controlled Composition Gradients.

2513-2520A

### Solutions

See Solid solutions

### Solvent extraction

Metallic Solvent Extraction of Manganese and Titanium From Ferroalloys.

Competitive Solvation and Complexation of Cu(II), Cu(II), Pb(II), Zn(II), and Ag(I) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide Solutions Containing Chloride Ion With Applications to Hydrometallurgy.

217-228B

439-448B

### Solvus (metallurgical)

See Solid solubility

### Sorption

See Absorption (material)

Adsorption

Desorption

### Sound waves

See Shock waves

### Space environment

Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn-Bi Immiscible Alloys.

Influence of Low-Gravity Solidification on Heterogeneous Nucleation in Stable Iron-Carbon Alloys.

59-68A

241-252A

### Spacing

Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al-Fe Alloys.

Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al-Fe Alloys".

Influence of Microstructure on Fatigue Behavior and Surface Fatigue Crack Growth of Fully Pearlitic Steels.

Crystallographic and Mechanistic Aspects of Growth by Shear and by Diffusional Processes.

205-212A

925-933A

2369-2409A

### Spalling

High Strain-Rate-Induced Cleavage Fracture in Mild Carbon Steel.

Rolling Contact Fatigue and Fatigue Crack Propagation in 1C-1.5Cr Bearing Steel in the Bainite Condition.

431-439A

889-893A

### Specific heat

Nanocrystalline Metals Prepared by High-Energy Ball Milling.

2333-2337A

### Specific resistance

See Resistivity

### Speiser

See Zinc

### Spheroidal iron

See Nodular iron

Spheroidizing A Study of Void Nucleation, Growth, and Coalescence in Spheroidized 1518 Steel.

117-134A

### Spin casting

See Centrifugal casting

### Spinodal decomposition

Decomposition and Dissolution Kinetics of  $\delta'$  Precipitation in Al-Li Binary Alloys.

1133-1141A

### Spinodal decomposition, Heating effects

Discussion of "Spinodal Decomposition During Aging of Fe-Ni-C Martensites" and Structure of the Fe<sub>6</sub>C Carbide.

2083-2086A

### Sponge iron

Mechanisms of Porous Iron Growth on Wustite and Magnetite During Gaseous Reduction.

733-741B

### Sponge metal

See Sponge iron

### Sponginess

See Porosity

### Spray casting

Spray Casting of Strip Steel: Process Analysis.

3237-3256A

### Spray coating

Stress Distributions and Material Response in Thermal Spraying of Metallic and Ceramic Deposits.

377-385B

### Spray forming

Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays.

899-912B

### Sprayed coatings, Mechanical properties

Stress Distributions and Material Response in Thermal Spraying of Metallic and Ceramic Deposits.

377-385B

### Spraying

See Spray casting

See Spray coating

See Spray forming

### Sputtering

Diffusion of Sputtered Inconel 617 Coatings in Titanium.

1613-1625A

### Squeeze casting

Microscopic Examination of the Interface Region in 6061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.

2489-2496A

### Squeezing

See Compressing

### Stability

See also Thermal stability

Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.

441-446A

Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.

557-565A

Interface Stability in the Ni-Cr-Al System. I. Morphological Stability of  $\beta$ - $\rightarrow$  Diffusion Couple Interfaces at 1150°C.

1901-1910A

Interface Stability in the Ni-Cr-Al System. II. Morphological Stability of  $\beta$ -Ni50Al vs.  $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.

1911-1919A

Effect of Rare Earth Metal Oxide Additions to Tungsten Electrodes.

3221-3236A

Stacking fault energy

An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Cu-Zn-Sn and Ag-12Zn-Sn Alloys: Role of 1 wt.% Zn.

1319-1322A

An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Ag-15Sn-Zn Alloys: Role of 1 wt.% Sn.

1327-1330A

Lattice Imperfections Studied by X-Ray Diffraction in Deformed Aluminum-Based Alloys: Al-Ge Alloy.

2597-2598A

Stainless steels

See also Austenitic stainless steels

Duplex stainless steels

Ferritic stainless steels

Martensitic stainless steels

### Stainless steels, Cleaning

Solution Chemistry of HNO<sub>3</sub>/HF Pickle Mixtures.

5-9B

### Stainless steels, Sorption

Effect of Oxygen on Vacancy Cluster Morphology in Metals.

1037-1051A

Static casting

See Casting

### Static fatigue

See Creep rupture strength

### Static pressure

See Hydrostatic pressure

### Statistical analysis

Optimal Control of an Aluminum Casting Furnace. I. The Control Model.

487-494B

### Steam electric power generation

A Mechanism for Hydrogen-Induced Intergranular Stress Corrosion Cracking in Alloy 600.

1261-1271A

Steam electric power plants

See Steam electric power generation

### Steam power plants

See Steam electric power generation

### Steel alloys

See Alloy steels

<b>Steel constituents</b>		
<i>See</i> Austenite		
Bainite		87-94A
Ferrite		353-364A
Martensite		411-420A
Pearlite		653-665A
<b>Steel making</b>		
<i>See also</i> Oxygen steel making		
The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	183-190B	717-724A
A Study on the Mathematical Modeling of Turbulent Recirculating Flows in Gas-Stirred Ladles.	269-277B	3101-3114A
Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.	313-320B	3153-3164A
Plume Characteristics and Liquid Circulation in Gas Injection Through a Porous Plug.	637-648B	3201-3212A
A Study on Measurement of Gas/Liquid Interfacial Area in a Dispersed Gas Injection System.	665-675B	3215-3220A
Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B	
Thermodynamics of Inclusion Formation in Fe—Ti—C—N Alloys.	879-884B	
Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	925-928B	401-410A
The Breakup of Bubbles into Jets During Submerged Gas Injection.	997-1003B	87-94A
Nitrogen Solution in BaO—B <sub>2</sub> O <sub>3</sub> and CaO—B <sub>2</sub> O <sub>3</sub> Slags.	1025-1032B	117-134A
Discussion of "Thermodynamics of Ca—CaF <sub>2</sub> and Ca—CaCl <sub>2</sub> Systems for the Dephosphorization of Steel".	1079-1081B	353-364A
Influence of Additives on Sulfide Capacity of CaO—CaF <sub>2</sub> —SiO <sub>2</sub> Slags.	1081-1084B	431-439A
An Assessment of the Ca—Fe—O System.	2759-2776A	1161-1175A
<b>Steels</b>		
<i>See also</i> Alloy steels		
Carbon steels		2089-2090A
Dual phase steels		2179-2188A
Structural steels		
Tool steels		
<b>Steels, Alloy development</b>		
Structure—Property Relationships in Bainitic Steels.	1527-1540A	2497-2504A
<b>Steels, Casting</b>		
Simulation of Fluid Flow Inside a Continuous Slab-Casting Machine.	387-400B	2729-2737A
<b>Steels, Coating</b>		
The Effects of Lead on the Electrochemical and Adhesion Behavior of Zinc Electrodeposits.	81-86B	2957-2966A
Spangle Formation in Galvanized Sheet Steel Coatings.	549-558B	
<b>Steels, Irradiation</b>		
Review of Small Specimen Test Techniques for Irradiation Testing.	1105-1119A	3101-3114A
<b>Steels, Mechanical properties</b>		
Fracture Mechanics and the Nuclear Industry.	1097-1104A	
<b>Steels, Microstructure</b>		
Simple Geometry and Crystallography Applied to Ferrous Bainites.	799-803A	377-385B
A Perspective on the Morphology of Bainite.	817-829A	489-497A
Bainite Viewed Three Different Ways.	1343-1380A	997-1005A
<b>Steels, Phase transformations</b>		
Bainite in Steels.	767-797A	1049-1061B
On Bainite Formation.	811-816A	2943-2955A
Analysis of the Composition of $\alpha$ Plates Isothermally Formed in Titanium Binary Alloys.	1547-1556A	3011-3019A
<b>Steels, Refining</b>		
Nitrogen Solubility in CaO—SiO <sub>2</sub> , CaO—MgO—SiO <sub>2</sub> , and BaO—MgO—SiO <sub>2</sub> Melts.	97-104B	
Nitrogen Solubility in CaO—CaF <sub>2</sub> —SiO <sub>2</sub> Melts.	105-109B	117-134A
Sulfide Capacity of CaO—CaF <sub>2</sub> —SiO <sub>2</sub> Slags.	121-129B	377-385B
<b>Steels, Rolling</b>		
Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.	153-164A	3075-3084A
<b>Steels, Welding</b>		
Fluid Dynamics of a Stationary Weld Pool.	45-57A	
Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Deoxidized Steel Weld Metals.	2047-2058A	
<b>Stereography</b>		
<i>See</i> Stereophotography		
<b>Stereophotography</b>		
Morphology and Properties of Low-Carbon Bainite.	877-888A	1261-1271A
Application of the Double-Shear Theory of Martensite Crystallography to the $\beta \rightarrow \alpha'$ Transformation in an U(Ga) Alloy.	2131-2136A	1933-1939A
<b>Sticking (adhesion)</b>		
<i>See</i> Adhesion		
<b>Stirring</b>		
<i>See also</i> Electromagnetic stirring		
The Spout of Air Jets Upwardly Injected Into a Water Bath.	71-80B	
The Computation of the Velocity Fields in Mechanically Agitated Melts for Turbulent and Non-Newtonian Regimes.	183-190B	2355-2361A
A Study on the Mathematical Modeling of Turbulent Recirculating Flows in Gas-Stirred Ladles.	269-277B	2577-2583A
Numerical Computations of Fluid Flow and Heat Transfer in a Gas-Stirred Liquid Bath.	771-781B	2905-2917A
Dynamic Similarity Considerations in Gas-Stirred Ladle Systems.	925-928B	
<b>Stora Kaldo process</b>		
<i>See</i> Oxygen steel making		
<b>Strain</b>		
Crack-Tip Behaviors of Stationary and Growing Cracks in Al—Fe—X Alloys. I. Near-Tip Strain Field.	69-80A	2189-2199A
		2577-2583A
		3171-3186A

## Stress intensity

### Stress intensity, Deformation effects

Influence of Deformation-Induced Martensite on Fatigue Crack Propagation in 304-Type Steels.

3137-3152A

### Stress intensity, Microstructural effects

Effect of Prior Austenitic Grain Size on Stress Corrosion Cracking of a High-Strength Steel.

503-505A

### Stress relaxation

High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy MA 956.

353-364A

### Stress relaxation, Heating effects

Development and Relaxation of Stress in Surface Layers; Composition and Residual Stress Profiles in  $\gamma'$ -Fe<sub>4</sub>N<sub>1-x</sub> Layers on  $\alpha$ -Iron Substrates.

189-204A

Phase Transformations and Stress Relaxation in  $\gamma'$ -Fe<sub>4</sub>N<sub>1-x</sub> Surface Layers During Oxidation.

901-912A

### Stress rupture strength

See Creep rupture strength

### Stress strain curves

Modeling Stress Development During the Solidification of Gray Iron Castings.

489-497A

The Cyclic Stress—Strain Properties, Hysteresis Loop Shape, and Kinematic Hardening of Two High-Strength Bearing Steels.

653-665A

Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. I. The Influence of Phase Stresses on the Bauschinger Effect.

717-724A

The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys.

744-748A

Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.

3063-3074A

Large-Strain Bauschinger Effects in FCC Metals and Alloys.

3201-3213A

### Stresses

See Residual stress

Stress intensity

Thermal stresses

### Stretching

Calculations of Forming Limit Diagrams.

87-94A

### Strip

See Strip steel

### Strip steel, Casting

Spray Casting of Strip Steel: Process Analysis.

3237-3256A

### Structural elements

See Structural members

### Structural hardening

See also Precipitation hardening

Solution strengthening

Strain hardening

Computer Simulation Study of Short-Range Order Hardening.

3165-3169A

### Structural materials

See Structural steels

### Structural members, Mechanical properties

Fracture Mechanics and the Nuclear Industry.

1097-1104A

### Structural steels

See also Rail steels

### Structural steels, Mechanical properties

Microscopic Observations of Adiabatic Shear Bands in Three Different Steels.

1161-1175A

### Structural steels, Metal working

Improvement in Toughness of Fe—Cr—Mn—C Steels by Thermal—Mechanical Treatments.

683-695A

### Structural steels, Rolling

Effect of Decreased Hot-Rolling Reduction Treatment on Fracture Toughness of Low-Alloy Structural Steels.

2555-2563A

### Structure (atomic)

See Atomic structure

### Structures (crystalline)

See Crystal structure

Grain structure

Microstructure

### Submerged arc welding

Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Deoxidized Steel Weld Metals.

2047-2058A

### Submerged arc welds

See Welded joints

### Substitutional impurities

Simple Geometry and Crystallography Applied to Ferrous Bainites.

799-803A

The Distribution of Substitutional Alloying Elements During the Bainite Transformation.

837-844A

The Bainite Transformation in Chemically Heterogeneous 300M High-Strength Steel.

859-875A

### Sulfur, Alloying elements

A Nonmetal Interaction Model for the Segregation of Trace Metals During Solidification of Fe—Ni—S, Fe—Ni—P, and Fe—Ni—S—P Alloys.

697-706B

### Sulfur, Environment

Gas Phase Embrittlement of Nickel by Sulfur.

3049-3061A

### Sulphur

See Sulfur

### Superalloys, Coating

The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.

1209-1222A

Interface Stability in the Ni—Cr—Al System. I. Morphological Stability of  $\beta$ — $\gamma$  Diffusion Couple Interfaces at 1150°C.

1901-1910A

Interface Stability in the Ni—Cr—Al System. II. Morphological Stability of  $\beta$ -Ni50Al vs.  $\gamma$ -Ni40Cr Diffusion Couple Interfaces at 1150°C.

1911-1919A

### Superalloys, Coatings

Diffusion of Sputtered Inconel 617 Coatings in Titanium.

1613-1625A

### Superalloys, Corrosion

Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Base Superalloys.

365-372A

A Mechanism for Hydrogen-Induced Intergranular Stress Corrosion Cracking in Alloy 600.

1261-1271A

### Superalloys, Crystal growth

Effects of the Amount of  $\gamma'$  and Oxide Content on the Secondary Recrystallization Temperature of Nickel-Base Superalloys.

547-555A

### Superalloys, Heat treatment

Effects of Cooling Rate and  $\gamma'$  Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.

1709-1717A

Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690. Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades.

3115-3125A

### Superalloys, Mechanical properties

High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy MA 956.

353-364A

Influence of Molybdenum on the Creep Properties of Nickel-Base Superalloy Single Crystals.

381-388A

Influence of Test Parameters on the Thermal—Mechanical Fatigue Behavior of a Superalloy.

389-399A

Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.

949-958A

Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.

2169-2177A

Intrinsic Stage I Crack Growth of Directionally Solidified Nickel-Based Superalloys During Low-Cycle Fatigue at Elevated Temperature.

2201-2208A

Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.

3215-3220A

### Superalloys, Melting

Electromagnetic Stirring With Alternating Current During Electroslag Remelting. Influence of Gravity on the Dispersoids During the Melting of an Oxide Dispersion-Strengthened Alloy (Inconel MA754).

723-731B

753-755A

### Superalloys, Welding

A Comparison of the Solidification Behavior of Incoloy 909 and Inconel 718.

479-488A

### Superconductors, Composite materials

High T<sub>c</sub> Composite Silver/Oxide Superconductors.

257-260A

### Superconductors, Irradiation

Radiation Effects in High-Temperature Superconductors: a Brief Review.

1015-1019A

### Superconductors, Phases (state of matter)

Phase Diagram of Cu<sub>2</sub>O—CuO—Y<sub>2</sub>O<sub>3</sub> System in Air.

2243-2248A

### Supercooling

Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys.

205-212A

Correction to "Solidification and Microstructure Analysis of Rapidly Solidified Melt-Spun Al—Fe Alloys".

205-212A

Modeling of Microsegregation Under Rapid Solidification Conditions.

260-263A

Spangle Formation in Galvanized Sheet Steel Coatings.

549-558B

### Superplastic forming

An Experimental Investigation of the Superplastic Forming Behavior of a Commercial Aluminum-Bronze.

2957-2966A

### Superplasticity

Mechanical Properties and Microstructures of Al—Mg—Sc Alloys.

421-430A

Interface Sliding, Migration, and Cracking During Fatigue Deformation of a Superplastic Aluminum—Zinc Eutectoid Alloy.

2497-2504A

The Effect of Fatigue Deformation on Microstructural Evolution in a Superplastic Aluminum—Zinc Eutectoid Alloy.

2505-2511A

### Superplasticity, Impurity effects

Effect of Impurity Content on Cavitation in the Superplastic Zn—22Al Alloy.

2605-2608A

### Superplasticity, Microstructural effects

New Aspects on the Superplasticity of Fine-Grained 7475 Aluminum Alloys.

2729-2737A

### Surface analysis (chemical)

Deuterium Surface Segregation in Titanium Alloys.

2003-2007A

### Surface diffusion

See Diffusion

### Surface energy

Spangle Formation in Galvanized Sheet Steel Coatings. Atomic Structure and Energy of  $\Sigma = 5$  Tilt Boundaries in Gold.

549-558B

### Surface finishing

See Surface pretreatments

### Surface hardening

Studies of Carbides in a Rapidly Solidified High-Speed Steel.

3021-3026A

## Ternary systems

<b>Surface layer, Heating effects</b>		
Phase Transformations and Stress Relaxation in $\gamma'$ - $\text{Fe}_4\text{N}_{1-x}$ Surface Layers During Oxidation.	901-912A	987-995A
<b>Surface layer, X ray analysis</b>		
Development and Relaxation of Stress in Surface Layers; Composition and Residual Stress Profiles in $\gamma'$ - $\text{Fe}_4\text{N}_{1-x}$ Layers on $\alpha$ -Iron Substrates.	189-204A	1853-1861A 2277-2280A 2749-2765A
<b>Surface pretreatments</b>		
Lithium Diffusion in Aluminum—Lithium Alloy 2090 Clad With 7072.	39-43A	
The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.	1745-1751A	
Microscopic Examination of the Interface Region in 6061-Al/SiC Composites Reinforced With As-Received and Oxidized SiC Particles.	2489-2496A	
<b>Surface properties</b>		
See Roughness		
Surface structure		
Surface tension		
Wetting		
<b>Surface roughness</b>		
See Roughness		
<b>Surface structure, Corrosion effects</b>		
Phase Transitions in Rapidly Solidified Stainless Steels Cathodically Hydrogen Charged.	1251-1259A	
<b>Surface structure, Heating effects</b>		
Studies of Carbides in a Rapidly Solidified High-Speed Steel.	3021-3026A	
<b>Surface tension</b>		
Spangle Formation in Galvanized Sheet Steel Coatings.	549-558B	
Effect of Oxygen on Vacancy Cluster Morphology in Metals.	1037-1051A	
Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.	2073-2082A	
<b>Suspensions</b>		
See Dispersions		
<b>Swelling, Radiation effects</b>		
Swelling Behavior of U—Pu—Zr Fuel.	517-528A	
Unified Theoretical Analysis of Experimental Swelling Data for Irradiated Austenitic and Ferritic/Martensitic Alloys.	1021-1035A	
Contributions From Research on Irradiated Ferritic/Martensitic Steels to Materials Science and Engineering.	1065-1071A	
Modeling Dislocation Evolution in Irradiated Alloys.	1829-1837A	
Experimental Studies of U—Pu—Zr Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II.	1863-1870A	
Fuel Constituent Redistribution During the Early Stages of U—Pu—Zr Irradiation.	1871-1876A	
<b>Synthesis</b>		
The Combustion Synthesis of Copper Aluminides.	567-577B	
Modeling of Materials Synthesis in Hybrid Plasma Reactors: Production of Silicon by Thermal Decomposition of $\text{SiCl}_4$ .	589-598B	
<b>Systems (metallurgical)</b>		
See Binary systems		
Ternary systems		
<b>Tantalum, Binary systems</b>		
Phase Relationships in the Al—Ta System.	539-545A	
<b>Tantalum, Composite materials</b>		
High-Temperature Interactions of Refractory Metal Matrices With Selected Ceramic Reinforcements.	2829-2837A	
<b>Tantalum, Corrosion</b>		
Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A	
<b>Tantalum, Extraction</b>		
Distribution of Niobium or Tantalum Between Fluorine-Containing Slag and Iron in Blast Furnace Smelting.	873-878B	
<b>Tantalum base alloys, Corrosion</b>		
Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A	
<b>Temperature</b>		
See Temperature distribution		
Temperature gradient		
<b>Temperature control</b>		
Optimal Control of an Aluminum Casting Furnace. I. The Control Model.	487-494B	
Optimal Control of an Aluminum Casting Furnace. II. Fuel Optimization.	495-500B	
<b>Temperature distribution</b>		
Hydrogen Permeation in Stationary Arc-Melted Nickel 200.	579-587B	
<b>Temperature field</b>		
See Temperature distribution		
<b>Temperature gradient</b>		
Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys.	59-68A	
Dendrite Solidification of Magnesium Alloy AZ91.	221-230A	
Dendrite Arm Climb by Temperature Gradient Zone Melting During Solidification of a High-Speed Tool Steel.	264-266A	
Atomic Mass Transport of Carbon in Two-Phase Nb—1.0Zr—0.1C Alloy Under a Temperature Gradient.	2929-2934A	
<b>Temperature measurement</b>		
See Pyrometry		
<b>Tempering</b>		
See also Quenching and tempering		
The Tempering of Iron—Nitrogen Martensite: Dilatometric and Calorimetric Analysis.	13-26A	
Mossbauer Study of the Distribution of Carbon Interstitials in Iron Alloys and the Isochronal Kinetics of the Aging of Martensite: the Clustering—Ordering Synergy.	589-602A	
<b>Tempering of Steel During Laser Treatment.</b>		
The Effect of Tempering and Aging on a Low Activation Martensitic Steel.		
Kinetics of Retrogression in Al—Zn—Mg—(Cu) Alloys.		
Correction to “Carbide Precipitation During Stage I Tempering of Fe—Ni—Cr Martensites”.		
<b>Tensile strength</b>		
See Tensile strength		
<b>Tensile modulus</b>		
See Modulus of elasticity		
<b>Tensile properties</b>		
See also Elongation		
Tensile strength		
Yield strength		
Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Pre-cracked Specimens. I. Fracture Behavior.		
Mechanical Properties and Microstructures of Al—Mg—Sc Alloys.		
Structure, Tensile Deformation, and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.		
Creep Behavior of Ti—25Al—10Nb—3V—1Mo.		
Mechanical Properties of Fully Densified Injection-Molded Carbonyl Iron Powder.		
<b>Tensile properties, Alloying effects</b>		
Effects of Microstructure and Tensile Properties of a Zirconium Addition to a Cu—Al—Ni Shape Memory Alloy.		
Effect of Boron on the Microstructure and Tensile Properties of Dual-Phase Steel.		
Fracture Toughness of Calcium-Modified Ultrahigh-Strength 4340 Steel.		
<b>Tensile properties, Composition effects</b>		
Matrix Composition Effects on the Tensile Properties of Tungsten—Molybdenum Heavy Alloys.		
<b>Tensile properties, Corrosion effects</b>		
Role of Heat Treatment and Cathodic Charging Conditions on the Hydrogen Embrittlement of HP 7075 Aluminum Alloy.		
<b>Tensile properties, Deformation effects</b>		
Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel.		
<b>Tensile properties, Microstructural effects</b>		
Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.		
<b>Tensile properties, Radiation effects</b>		
Review of Small Specimen Test Techniques for Irradiation Testing.		
<b>Tensile properties, Temperature effects</b>		
Effects of Temperature and Environment on the Tensile and Fatigue Crack Growth Behavior of a Ni <sub>3</sub> Al-Base Alloy.		
<b>Tensile strength</b>		
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.		
Influences of Matrix Ductility, Interfacial Bonding Strength, and Fiber Volume Fraction on Tensile Strength of Unidirectional Metal Matrix Composite.		
Finite Element Prediction of High Cycle Fatigue Life of Aluminum Alloys.		
The Effect of Matrix Reinforcement Reaction on Fracture in Ti—6Al—4V-Base Composites.		
Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.		
<b>Tensile strength, Corrosion effects</b>		
Internal Hydrogen Effects on Tensile Properties of Iron- and Nickel-Base Superalloys.		
Gas Phase Embrittlement of Nickel by Sulfur.		
<b>Tensile strength, Impurity effects</b>		
The Influence of Oxygen on the Structure, Fracture, and Fatigue Crack Propagation Behavior of Ti—8.6 wt.% Al.		
<b>Tensile strength, Microstructural effects</b>		
Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates.		
<b>Tensile strength, Welding effects</b>		
Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.		
<b>Tensile tests</b>		
See Tension tests		
<b>Tensile yield strength</b>		
See Yield strength		
<b>Tension impact tests</b>		
See Impact tests		
<b>Tension tests</b>		
Through-Thickness Fracture of a Ti—V—N Plate Steel.		
The Effect of Microstructure on Localized Melting at Separation in Ti—6Al—4V Tensile Samples.		
Inhomogeneous Deformation in Inconel 718 During Monotonic and Cyclic Loadings.		
<b>Terbium compounds, Directional solidification</b>		
Directional Solidification and Heat Treatment of Terfenol-D Magnetostrictive Materials.		
<b>Ternary systems, Phases (state of matter)</b>		
A Reassessment of the Cr—Fe—Ni System.		
The Ag—Au—Si System: Experimental and Calculated Phase Diagram.		
A Thermodynamic Assessment of the Fe—Mn—C System.		
A Thermodynamic Evaluation of the Cr—Fe—N System.		
Discussion of “On the Free Energy of Formation of TiC and $\text{Al}_4\text{C}_3$ ”.		

## Ternary systems

An Assessment of the Ca—Fe—O System.	2759-2776A	Thermodynamics of Inclusion Formation in Fe—Ti—C—N Alloys.	879-884B
Thermodynamic Evaluation of the Cr—Ni—C System.	2777-2787A	Removal of Antimony From Copper by Injection of Soda Ash.	967-975B
<b>Texture</b>		ChemSage—a Computer Program for the Calculation of Complex Chemical Equilibria.	1013-1023B
See also Rolling texture		Discussion of "Thermodynamics of Ca—CaF <sub>2</sub> and Ca—CaCl <sub>2</sub> Systems for the Dephosphorization of Steel".	1079-1081B
Characterization of the Morphological and Lattice Orientational Microstructure of As-Cast Aluminum Ingot.	2265-2275A	Applications of Solid Electrolytes in Thermodynamic Studies of Materials: a Review.	1223-1250A
Interface Characterization of Epitaxial Silver Films on Si(100) and Si(111) Grown by Molecular Beam Epitaxy.	2323-2332A	A Reassessment of the Cr—Fe—Ni System.	1573-1680A
<b>Texture, Deformation effects</b>		The Ag—Au—Si System: Experimental and Calculated Phase Diagram.	1877-1884A
Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing.	3001-3010A	The Unified Interaction Parameter Formalism: Thermodynamic Consistency and Applications.	1997-2002A
<b>Texture, Heating effects</b>		Behavior of Grain Boundary Chemistry and Precipitates Upon Thermal Treatment of Controlled Purity Alloy 690.	2097-2107A
Annealing Response of 3000 and 5000 Series Aluminum Alloys.	2643-2654A	A Thermodynamic Assessment of the Fe—Mn—C System.	2115-2123A
<b>Thermal capacity</b>		A Thermodynamic Evaluation of the Cr—Fe—N System.	2477-2488A
See Specific heat		Dimerization of Boron.	2609A
<b>Thermal cycling</b>		Discussion of "On the Free Energy of Formation of TiC and Al <sub>2</sub> C <sub>3</sub> ".	2609-2610A
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A	An Assessment of the Ca—Fe—O System.	2759-2776A
Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.	2795-2804A	Thermodynamic Evaluation of the Cr—Ni—C System.	2777-2787A
<b>Thermal decomposition</b>		Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.	2897-2903A
See Pyrolysis		<b>Thermomechanical treatment</b>	
<b>Thermal diffusion</b>		Improvement in Toughness of Fe—Cr—Mn—C Steels by Thermal—Mechanical Treatments.	683-695A
Atomic Mass Transport of Carbon in Two-Phase Nb—1.0Zr—0.1C Alloy Under a Temperature Gradient.	2929-2934A	Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to $l = 12$ and Their Use for the On-Line Prediction of $r$ -Value.	697-706A
<b>Thermal expansion</b>		Residual Grain-Interaction Stresses in Zirconium Alloys.	1083-1095A
Thermal Expansion and Elastic Properties of High Gold—Tin Alloys.	1885-1889A	The Boron Hardenability Effect in Thermomechanically Processed, Direct-Quenched 0.2% Carbon Steels.	1697-1708A
<b>Thermal fatigue</b>		Annealing Response of 3000 and 5000 Series Aluminum Alloys.	2643-2654A
Influence of Test Parameters on the Thermal—Mechanical Fatigue Behavior of a Superalloy.	389-399A	New Aspects on the Superplasticity of Fine-Grained 7475 Aluminum Alloys.	2729-2737A
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A	An Experimental Investigation of the Superplastic Forming Behavior of a Commercial Aluminum-Bronze.	2957-2966A
The Chemical and Mechanical Processes of Thermal Fatigue Degradation of an Aluminide Coating.	1209-1222A	<b>Thermostability</b>	
Thermal Fatigue of Ti—24Al—11Nb/SCS-6.	1595-1602A	See Thermal stability	
<b>Thermal fatigue, Microstructural effects</b>		<b>Thickness</b>	
Influence of Microstructure on the Thermal Fatigue Behavior of a Cast Cobalt-Based Superalloy.	949-958A	An Experimental Investigation of the Superplastic Forming Behavior of a Commercial Aluminum-Bronze.	2957-2966A
<b>Thermal flux</b>		Spray Casting of Strip Steel: Process Analysis.	3237-3256A
See Heat transmission		<b>Thin films, Microstructure</b>	
<b>Thermal properties</b>		The Evolution of Microstructure in Al—2Cu Thin Films: Precipitation, Dissolution, and Reprecipitation.	2449-2458A
See Specific heat		<b>Thorium, Diffusion</b>	
Thermal expansion		A Study of the Thermotransport Behavior of Cobalt in Thorium.	2141-2148A
Thermal stability		<b>Tig arc welding</b>	
See Smelting		See Gas tungsten arc welding	
<b>Thermal stability</b>		<b>TIG welding</b>	
On the Evaluation of Stability of Rare Earth Oxides as Face Coats for Investment Casting of Titanium.	559-566B	See Gas tungsten arc welding	
<b>Thermal stresses</b>		<b>Time temperature transformation curves</b>	
ALS-PEN—a Mathematical Model for Thermal Stresses in Direct Chill Casting of Aluminum Billets.	1049-1061B	See TTT curves	
<b>Thermochemistry</b>		<b>Tin, Binary systems</b>	
Thermochemistry of Calcium Oxide and Calcium Hydroxide in Fluoride Slags.	621-627B	Detailed Assessment of Partial Thermodynamic Quantities of Tin in Molten Bi—Sn Alloys From Electromotive Force Measurements.	87-96B
<b>Thermocycling</b>		Thermodynamic Study and the Phase Diagram of the Mg—Sn System.	707-714B
See Thermal cycling		<b>Tin, Casting</b>	
<b>Thermodynamics</b>		On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.	279-283B
See also Enthalpy		<b>Tin, Extraction</b>	
Entropy		Fuming of Stannous Oxide From Silicate Melts.	449-454B
Heat of formation		<b>Tin, Impurities</b>	
Detailed Assessment of Partial Thermodynamic Quantities of Tin in Molten Bi—Sn Alloys From Electromotive Force Measurements.	87-96B	Effect of Impurity Content on Creep Crack Growth Resistance in 1Cr1Mo0.25V Ferritic Steels.	1941-1949A
The Dependence of the Oxidation State of Vanadium on the Oxygen Pressure in Melts of VO <sub>2</sub> , Na <sub>2</sub> O—VO <sub>x</sub> , and CaO—SiO <sub>2</sub> —VO <sub>x</sub> .	111-120B	<b>Tin, Mechanical properties</b>	
Thermodynamics of Nitrogen in Ca—CaF <sub>2</sub> Slags.	205-207B	Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2521-2530A
The Influence of Buoyant Forces and Volume Fraction of Particles on the Particle Pushing/Entrapment Transition During Directional Solidification of Al/SiC and Al/Graphite Composites.	231-239A	<b>Tin, Refining</b>	
Thermodynamics of the System NaF—AlF <sub>3</sub> . VI. Revision. An Assessment of the CaO—SiO <sub>2</sub> System.	285-294B	Purification of Tin by Zone Refining With Development of a New Model.	455-461B
Thermodynamics of Titanium in Ag—Cu Alloys.	303-312B	<b>Tin base alloys, Composite materials</b>	
A Method to Estimate Free Energies of Formation of Mineral Sulfides.	349-355B	Effect of Phase Morphologies on the Mechanical Properties of Babbitt/Bronze Composite Interfaces.	529-538A
A Model for Silicate Melts.	401-402B	<b>Tin base alloys, Powder technology</b>	
A Thermodynamic Study of the Carbothermic Reduction of Alumina in Plasma.	404-406B	Modeling of Spray Deposition: Measurements of Particle Size, Gas Velocity, Particle Velocity, and Spray Temperature in Gas-Atomized Sprays.	899-912B
Identification of Thermodynamically Stable Ceramic Reinforcement Materials for Iron Aluminide Matrices.	406-408B	<b>Tin compounds, Mechanical properties</b>	
Application of the Quasi-Subregular Solution Model: the Iron—Carbon System.	441-446A	Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A
Gibbs Energies of Formation of Intermetallic Phases in the Systems Pt—Mg, Pt—Ca, and Pt—Ba and Some Applications.	447-453A	Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2709-2715A
Interaction Coefficients in the Iron—Carbon—Titanium and Titanium—Silver Systems.	521-527B	<b>Tin nickel alloy plating</b>	
Interaction Coefficients in Fe—C—Ti—I (I = Si, Cr, Al, Ni) Systems.	537-541B	See Alloy plating	
Thermodynamic Study and the Phase Diagram of the Mg—Si System.	543-547B	<b>Titanium, Alloying elements</b>	
Solubility of Uranous Sulfate in Aqueous Sulfuric Acid Solution.	707-714B	Temperature and Orientation Dependence of the Deformation and Fracture in Boron-Doped Ni <sub>70</sub> Al <sub>15</sub> Ti Single Crystals.	107-115A

## Transition temperature (superconductivity)

<b>Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.</b>	153-164A	<b>Titanium compounds, Welding</b>	Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb: Applications to Fusion Welding.	1273-1286A
Thermodynamics of Titanium in Ag—Cu Alloys.	349-355B			
<b>Titanium, Casting</b>		<b>Titanium ores</b>	See Ilmenite	
On the Evaluation of Stability of Rare Earth Oxides as Face Coats for Investment Casting of Titanium.	559-566B	<b>Titanium steels, Phase transformations</b>	The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe—C—Ti Alloys.	1509-1515A
<b>Titanium, Coating</b>			Interaction Coefficients in the Iron—Carbon—Titanium and Titanium—Silver Systems.	537-541B
Diffusion of Sputtered Inconel 617 Coatings in Titanium.	1613-1625A		Interaction Coefficients in Fe—C—Ti—I (I = Si, Cr, Al, Ni) Systems.	543-547B
<b>Titanium, Corrosion</b>		<b>Tool steels</b>	See also High speed tool steels	
Deuterium Surface Segregation in Titanium Alloys.	2003-2007A			
<b>Titanium, Extraction</b>		<b>Tool steels, Mechanical properties</b>	The Fatigue Life of a Complex Microstructure With Bainite in a High Carbon Cr—Si Tool Steel.	2282-2286A
Metallic Solvent Extraction of Manganese and Titanium From Ferroalloys.	217-228B		On the Analysis of Delamination Fractures in High-Strength Steels.	2565-2575A
The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. I. Intrinsic Kinetics.	321-330B	<b>Topography</b>	A General Method for Estimation of Fracture Surface Roughness. I. Theoretical Aspects.	1193-1199A
The Selective Chlorination of Iron From Ilmenite Ore by CO—Cl <sub>2</sub> Mixtures. II. Mathematical Modeling of the Fluidized-Bed Process.	331-340B		A General Method for Estimation of Fracture Surface Roughness. II. Practical Considerations.	1201-1207A
The Selective Carbochlorination of Iron From Titaniferous Magnetite Ore in a Fluidized Bed.	341-347B	<b>Topology</b>	Metric and Topological Characterization of the Advanced Stages of Loose Stack Sintering.	2935-2941A
<b>Titanium, Ternary systems</b>		<b>Torsional modulus</b>	See Shear modulus	
Discussion of 'On the Free Energy of Formation of TiC and Al <sub>2</sub> C <sub>3</sub> '.	2609-2610A	<b>Total heat</b>	See Enthalpy	
<b>Titanium base alloys, Composite materials</b>		<b>Toughness</b>	See also Fracture toughness	
A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.	1571-1578A		Notch toughness	
The Effect of Matrix Reinforcement Reaction on Fracture in Ti—6Al—4V-Base Composites.	1579-1587A		Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Pre-cracked Specimens. I. Fracture Behavior.	313-320A
Effects of Interfacial Strength on Fatigue Crack Growth in a Fiber-Reinforced Titanium-Alloy Composite.	1603-1612A		Mechanical Properties and Microstructures of Al—Mg—Sc Alloys.	421-430A
<b>Titanium base alloys, Corrosion</b>			Morphology and Properties of Low-Carbon Bainite.	877-886A
Deuterium Surface Segregation in Titanium Alloys.	2003-2007A		Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A
<b>Titanium base alloys, Directional solidification</b>			Fracture Behavior of Laminated Metal—Metallic Glass Composites.	2159-2168A
Modeling of Solidification Microstructures in Concentrated Solutions and Intermetallic Systems.	1311-1318A		Mixed Mode I/II/III Fracture Toughness of an Experimental Rotor Steel.	2539-2545A
<b>Titanium base alloys, Heat treatment</b>			Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2709-2715A
Plasma Source Nitrogen Ion Implantation of Ti—6Al—4V.	1663-1667A	<b>Toughness, Deformation effects</b>	Improvement in Toughness of Fe—Cr—Mn—C Steels by Thermal—Mechanical Treatments.	683-695A
<b>Titanium base alloys, Mechanical properties</b>				
The Influence of Oxygen on the Structure, Fracture, and Fatigue Crack Propagation Behavior of Ti—8.6 wt% Al. Structure, Tensile Deformation, and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.	95-105A	<b>Toughness, Microstructural effects</b>	Structure—Property Relationships in Bainitic Steels.	1527-1540A
Creep Behavior of Ti—25Al—10Nb—3V—1Mo.	609-625A		The Fatigue Life of a Complex Microstructure With Bainite in a High Carbon Cr—Si Tool Steel.	2282-2286A
The Effect of Deformation-Induced Transformation on the Fracture Toughness of Commercial Titanium Alloys.	641-651A	<b>Transferring</b>	See Heat transfer	
Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy.	1733-1744A		Mass transfer	
The Nature of the Two Opening Levels Following an Overload in Fatigue Crack Growth.	2687-2699A	<b>Transformations (materials)</b>	See Phase transformations	
Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing.	2717-2727A	<b>Transition metal alloys</b>	See also Cobalt base alloys	
The Effect of Microstructure on Localized Melting at Separation in Ti—6Al—4V Tensile Samples.	3001-3010A		Copper base alloys	
<b>Titanium base alloys, Microstructure</b>			Ferrous alloys	
Deformation Structure in a Ti—24Al—11Nb Alloy.	3127-3136A		Nickel base alloys	
<b>Titanium base alloys, Phase transformations</b>			Titanium base alloys	
Study of Phase Transition in Ti <sub>50</sub> Ni <sub>47</sub> Fe <sub>2.5</sub> Alloy.	1322-1324A		Zinc base alloys	
Analysis of the Composition of $\alpha$ Plates Isothermally Formed in Titanium Binary Alloys.	1547-1556A		Zirconium base alloys	
Interphase Boundary Structures Associated With Diffusional Phase Transformations in Titanium-Base Alloys.	1627-1643A	<b>Transition metal alloys, Diffusion</b>	On the Chemistry of Grain Boundary Segregation and Grain Boundary Fracture.	2339-2354A
<b>Titanium base alloys, Structural hardening</b>				
Particle Coarsening Behavior of $\alpha$ — $\beta$ Titanium Alloys.	1645-1654A	<b>Transition metal compounds</b>	See also Cobalt compounds	
<b>Titanium carbide, Composite materials</b>			Copper compounds	
Plastic Relaxation of Thermoelastic Stress in Aluminum/Ceramic Composites.	673-682A		Iron compounds	
The Effect of Matrix Reinforcement Reaction on Fracture in Ti—6Al—4V-Base Composites.	1579-1587A		Mercury compounds	
<b>Titanium compounds</b>			Nickel compounds	
See also Titanium carbide			Titanium compounds	
<b>Titanium compounds, Atomic properties</b>			Yttrium compounds	
Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy.	1655-1662A		Zirconium compounds	
<b>Titanium compounds, Composite materials</b>		<b>Transition metal compounds, Mechanical properties</b>	Mechanical Properties of Diverse Binary High-Temperature Intermetallic Compounds.	2709-2715A
Interaction of Al <sub>2</sub> O <sub>3</sub> —ZrO <sub>2</sub> Fibers With a Ti—Al Matrix During Pressure Casting.	213-219A			
Reaction Zone Microstructure in a Ti <sub>3</sub> Al + Nb/SiC Composite.	1559-1569A	<b>Transition metals</b>	See Cobalt	
Matrix/Reinforcement Interactions in Shock-Wave Consolidated Titanium Aluminide Reinforced With SiC.	1589-1593A		Copper	
Thermal Fatigue of Ti—24Al—11Nb/SCS-6.	1595-1602A		Hafnium	
Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.	2701-2707A		Iron	
<b>Titanium compounds, Irradiation</b>			Manganese	
Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.	1809-1815A		Nickel	
<b>Titanium compounds, Mechanical properties</b>			Titanium	
The Flow and Fracture of a Ti <sub>3</sub> Al—Nb Alloy.	135-143A		Yttrium	
Microstructure, Deformation, and Fracture Characteristics of an Al <sub>7</sub> Pd <sub>2</sub> Ti <sub>25</sub> Intermetallic Alloy.	145-151A		Zinc	
Mechanical Properties of High-Temperature Titanium Intermetallic Compounds.	1951-1957A		Zirconium	
Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2521-2530A	<b>Transition temperature (superconductivity)</b>	High T <sub>c</sub> Composite Silver/Oxide Superconductors.	257-260A
Fracture and Toughening Mechanisms in an $\alpha_2$ Titanium Aluminide Alloy.	2687-2699A			

## Transition temperature (superconductivity)

<b>Transition temperature (superconductivity), Radiation effects</b>	1015-1019A	Dislocation Structures Ahead of Advancing Cracks. Elastic Strain Energy of Deformation Twinning in Tetragonal Crystals.	2411-2417A 2521-2530A
Radiation Effects in High-Temperature Superconductors: a Brief Review.			
<b>Transmission</b>		<b>Twinning, Heating effects</b>	
See Heat transmission		Study of Annealing Twins in FCC Metals and Alloys.	2891-2896A
<b>Transmission electron microscopy</b>			
High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation.	853-858A	<b>Udylite process</b>	
		See Electroplating	
<b>TTT curves</b>	817-829A	<b>Ultimate tensile strength</b>	
A Perspective on the Morphology of Bainite.		See Tensile strength	
High-Temperature Transmission Electron Microscopy In Situ Study of Lower Bainite Carbide Precipitation.	853-858A	<b>Ultrasonic attenuation</b>	
The Bainite Transformation in Chemically Heterogeneous Low-Carbon High-Strength Steels.	859-875A	Acoustoelastic Determination of the Higher Order Orientation Distribution Function Coefficients Up to $l = 12$ and Their Use for the On-Line Prediction of $r$ -Value.	697-706A
Morphology and Properties of Low-Carbon Bainite.	877-888A	Ultrasonic Velocity Change With Creep Damage in Copper.	1725-1732A
Fatigue and Fracture of High-Alloyed Steel Specimens Subjected to Purely Thermal Cycling.	935-948A	<b>Ultrasonic testing</b>	
Growth and Overall Transformation Kinetics Above the Bay Temperature in Fe—C—Mo Alloys.	1413-1432A	Ultrasonic Velocity Change With Creep Damage in Copper.	1725-1732A
The Incomplete Transformation Phenomenon in Fe—C—Mo Alloys.	1433-1463A	<b>Undercooling</b>	
Overall Reaction Kinetics and Morphology of Austenite Decomposition Between the Upper Nose and the $M_3$ of a Hypoeutectoid Fe—C—Cr Alloy.	1465-1478A	See Supercooling	
Continuous Cooling Transformations and Microstructures in a Low-Carbon, High-Strength Low-Alloy Plate Steel.	1493-1507A	<b>Upsetting</b>	
The Effect of Manganese and Silicon on the Morphology and Kinetics of the Bainite Transformation in Fe—C—Ti Alloys.	1509-1515A	Experimental Assessment of Structure and Property Predictions During Hot Working.	3101-3114A
The Influence of the Silicon and Manganese Concentrations on the Kinetics of the Bainite Transformation in Fe—C—Si—Mn Alloys.	1517-1525A	<b>Uranium, Environment</b>	
<b>Tube rolling</b>	153-164A	Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A
Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.		<b>Uranium, Extraction</b>	
<b>Tubemaking</b>		Continuous Precipitation of Uranium With Hydrogen Peroxide.	819-826B
See Tube rolling		Solubility of Uranous Sulfate in Aqueous Sulfuric Acid Solution.	839-844B
<b>Tubes</b>		<b>Uranium base alloys, Irradiation</b>	
See also Seamless tubes		Swelling Behavior of U—Pu—Zr Fuel.	517-528A
<b>Tubes, Mechanical properties</b>	3001-3010A	Experimental Studies of U—Pu—Zr Fast Reactor Fuel Pins in the Experimental Breeder Reactor-II.	1863-1870A
Biaxial Creep Testing of Textured Ti—3Al—2.5V Tubing.		Fuel Constituent Redistribution During the Early Stages of U—Pu—Zr Irradiation.	1871-1876A
<b>Tubing (metal)</b>		<b>Uranium base alloys, Phase transformations</b>	
See Tubes		The Kinetics of the Isothermal Martensitic $\beta \rightarrow \alpha$ Transformation in U(Ga) Alloys.	2125-2129A
<b>Tubeular goods</b>		Application of the Double-Shear Theory of Martensite Crystallography to the $\beta \rightarrow \alpha$ Transformation in an U(Ga) Alloy.	2131-2136A
See Tubes		<b>V A characteristics</b>	
<b>Tungsten, Corrosion</b>	1959-1967A	See Current voltage characteristics	
Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.		<b>V notch Charpy impact tests</b>	
		See Impact tests	
<b>Tungsten, Metallography</b>	2209-2214A	<b>V notch Charpy tests</b>	
Image Analysis for Grain Shape Characterization in Lamp Filaments.		See Impact tests	
<b>Tungsten, Powder technology</b>	2137-2139A	<b>Vacancies (crystal defects)</b>	
Degree of Pore-Grain Boundary Contact During Sintering.		See Lattice vacancies	
Nanocrystalline Metals Prepared by High-Energy Ball Milling.	2333-2337A	<b>Vacancies (lattice)</b>	
		See Lattice vacancies	
<b>Tungsten arc welding</b>	744-748A	<b>Vacuum induction melting</b>	
See Gas tungsten arc welding		Influence of Gravity on the Dispersoids During the Melting of an Oxide Dispersion-Strengthened Alloy (Inconel MA754).	753-755A
<b>Tungsten base alloys, Mechanical properties</b>	1325-1327A	<b>Vacuum melting</b>	
The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys.		See Vacuum induction melting	
<b>Tungsten base alloys, Powder technology</b>	1709-1717A	<b>Vanadium, Alloying elements</b>	
Matrix Composition Effects on the Tensile Properties of Tungsten—Molybdenum Heavy Alloys.		Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.	153-164A
<b>Tungsten inert gas welding</b>	2169-2177A	Standard Gibbs Energies of Formation of the Carbides of Vanadium by EMF Measurements.	313-320B
See Gas tungsten arc welding		Structure of Continuously Cooled Low-Carbon Vanadium Steels.	2839-2855A
<b>Tungsten steels, Heat treatment</b>	987-995A	<b>Vanadium, Corrosion</b>	
Tempering of Steel During Laser Treatment.		Embrittlement by Liquid Uranium in Some Group VB and VIB Metals and Alloys During Tensile Loading at 1473K.	1959-1967A
<b>Turbine blades, Heat treatment</b>	3115-3125A	<b>Vanadium, Extraction</b>	
Microstructure, Creep Properties, and Rejuvenation of Service-Exposed Alloy 713C Turbine Blades.		The Dependence of the Oxidation State of Vanadium on the Oxygen Pressure in Melts of $VO_x$ , $Na_2O—VO_x$ , and $CaO—SiO_2—VO_x$ .	111-120B
<b>Turbine disks, Heat treatment</b>	2169-2177A	<b>Vanadium compounds, Mechanical properties</b>	
Effects of Cooling Rate and $\gamma'$ Morphology on Creep and Stress-Rupture Properties of a Powder Metallurgy Superalloy.		Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.	3063-3074A
<b>Turbines</b>	997-1003B	<b>Vapor deposition</b>	
See also Gas turbine engines		Three-Dimensional Transport Phenomena in Chemical Vapor Deposition Equipment: a Comparison of Theoretical Predictions with Measurements and Some Concepts Regarding Equipment Design.	753-760B
<b>Turbines, Materials selection</b>		<b>Vaporizing</b>	
Fatigue Crack Propagation Behavior of a Single Crystalline Superalloy.	557-565A	Fuming of Stannous Oxide From Silicate Melts.	449-454B
		The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire.	919-923A
<b>Turbomachinery</b>	1655-1662A	<b>Veining (structure)</b>	
See Turbines		See Preferred orientation	
<b>Tuyeres</b>	1733-1744A	<b>Vessels</b>	
The Breakup of Bubbles Into Jets During Submerged Gas Injection.	2317-2322A	See Pressure vessels	
<b>Twinning</b>	2323-2332A	<b>Viscosity</b>	
Stability of Microstructures in Chill-Cast Aluminum Alloys Containing Twinned Columnar Growth Structures.		Viscosities and Activities in Lead-Smelting Slags.	501-510B
Transmission Electron Microscopy Investigation of Interfaces in a Two-Phase TiAl Alloy.		<b>Voids</b>	
The Effect of Deformation-Induced Transformation on the Fracture Toughness of Commercial Titanium Alloys.		A Study of Void Nucleation, Growth, and Coalescence in Spheroidized 1518 Steel.	117-134A
Twin Boundaries in $CS_4—TiSi_2$ .			
Interface Characterization of Epitaxial Silver Films on Si(100) and Si(111) Grown by Molecular Beam Epitaxy.			

## Yield strength

<b>Hydrogen-Assisted Ductile Fracture in Spheroidized Steel. I. Axisymmetric Tension.</b>	1520	465-477A	<b>Wetting</b>	<i>Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.</i>	2073-2082A
<b>A Study of the Reaction Zone in a SiC Fiber-Reinforced Titanium Alloy Composite.</b>		1571-1578A	<b>Whisker composites, Mechanical properties</b>	<i>Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates.</i>	401-410A
<b>Voids, Radiation effects</b>				<i>Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.</i>	411-420A
<b>Contributions From Research on Irradiated Ferritic Martensitic Steels to Materials Science and Engineering.</b>				<i>Crack Path Morphology in Silicon Carbide Whisker-Reinforced Aluminum Composite.</i>	1783-1785A
<b>The Effect of Oxygen on Void Stability in Ion-Irradiated Steel.</b>				<i>Some Observations on the High-Temperature Creep Behavior of 6061 Al—SiC Composites.</i>	2089-2090A
<b>Effects of Preinjected Helium in Heavy-Ion Irradiated Nickel and Nickel—Copper Alloys.</b>					
<b>Volatilizing</b>			<b>White metal (copper matte)</b>		
<i>See</i> Vaporizing			<i>See</i> Copper mattes		
<b>Water</b>			<b>Widmanstatten structure</b>	<i>Bainite in Steels.</i>	767-779A
<b>See</b> Salt water				<i>A Perspective on the Morphology of Bainite.</i>	817-829A
<b>Water content</b>				<i>Influence of Carbon Concentration and Reaction Temperature Upon Bainite Morphology in Fe—C—2Mn Alloys.</i>	1391-1411A
<i>See</i> Moisture content				<i>Continuous Cooling Transformations and Microstructures in a Low-Carbon, High-Strength Low-Alloy Plate Steel.</i>	1493-1507A
<b>Water quenching</b>		2281-2282A		<i>An Investigation of the High-Temperature and Solidification Microstructures of PH 13-8 Molybdenum Stainless steel.</i>	2465-2475A
<b>Effect of Cooling Rate on Hardness of FeAl and NiAl.</b>					
<b>Wear</b>			<b>Wire, Powder technology</b>	<i>The Process of Bubble Formation in the Hot Isostatic Pressing Treated, Doped Molybdenum Wire.</i>	919-923A
<i>See also</i> Pitting (wear)			<b>Wolfram</b>	<i>See</i> Tungsten	
<b>Wear, Heating effects</b>		987-995A	<b>Work hardening</b>	<i>See</i> Strain hardening	
<b>Tempering of Steel During Laser Treatment.</b>			<b>Work softening</b>	<i>See</i> Strain softening	
<b>Wear resistance, Heating effects</b>			<b>Work strengthening</b>	<i>See</i> Strain hardening	
<b>Plasma Source Nitrogen Ion Implantation of Ti—6Al—4V.</b>	1663-1667A		<b>Workability</b>	<i>See</i> Formability	
<b>Weathering steels</b>			<b>Wustite, Reduction (chemical)</b>	<i>Reduction of Solid Wustite in H<sub>2</sub>/H<sub>2</sub>O/CO/CO<sub>2</sub> Gas Mixtures.</i>	135-139B
<i>See</i> Structural steels			<b>X ray analysis</b>	<i>See</i> X ray diffraction	
<b>Weld defects</b>			<b>X ray diffraction</b>	<i>See also</i> X ray powder diffraction	
<b>Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.</b>	1287-1298A			<i>X ray stress analysis</i>	
<b>Weld metal, Microstructure</b>				<i>Development and Relaxation of Stress in Surface Layers; Composition and Residual Stress Profiles in γ'-Fe<sub>2</sub>N<sub>1-x</sub> Layers on <i>c</i>-Iron Substrates.</i>	169-204A
<b>Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Deoxidized Steel Weld Metals.</b>	2047-2058A			<i>An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Cu—1Zn—Sn and Ag—1Zn—Sn Alloys: Role of 1 wt.% Zn.</i>	1319-1322A
<b>Welded joints</b>		600-603B			
<b>Modeling of Interfacial Phenomena in Welding.</b>			<b>X ray diffractometer</b>	<i>See</i> X ray diffraction	
<b>Welded joints, Corrosion</b>		1287-1298A			
<b>Hydrogen Permeation in Stationary Arc-Melted Nickel 200.</b>	579-587B		<b>X ray powder analysis</b>	<i>See</i> X ray powder diffraction	
<b>Effect of Oxygen on Hydrogen Cracking in High-Strength Weld Metal.</b>		313-320A			
<b>Welded joints, Mechanical properties</b>			<b>X ray powder diffraction</b>	<i>An X-Ray Diffraction Line Profile Analysis in Cold-Worked FCC Ag—1Sn—Zn Alloys: Role of 1 wt.% Sn.</i>	1327-1330A
<b>Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. I. Fracture Behavior.</b>	979-986A				
<b>Fracture Behavior of C—Mn Steel and Weld Metal in Notched and Precracked Specimens. II. Micromechanism of Fracture.</b>	1273-1286A		<b>X ray powder photography</b>	<i>See</i> X ray powder diffraction	
<b>Structure—Property Relationships in Bainitic Steels.</b>	1753-1766A				
<b>Delayed Mechanical Failure of Silver-Interlayer Diffusion Bonds.</b>	1767-1782A		<b>X ray stress analysis</b>	<i>Determination of Residual Stresses in Thin Sheet Titanium Aluminide Composites.</i>	2701-2707A
<b>Welded joints, Microstructure</b>			<b>Yield</b>	<i>Acoustic Emission During Deformation of Dual-Phase Steels.</i>	373-379A
<b>Grain Structures in Gas-Tungsten-Arc Welds of Austenitic Stainless Steel With Ferrite Primary Phase.</b>	2009-2019A		<b>Yield strain</b>	<i>See</i> Strain	
<b>Effect of Thermal Processing on the Microstructure of Ti—26Al—11Nb. Applications to Fusion Welding.</b>	2021-2036A		<b>Yield strength</b>	<i>High-Temperature Deformation Mechanisms and Constitutive Equations for the Oxide Dispersion-Strengthened Superalloy MA 956.</i>	353-364A
<b>Microstructure of Stainless Steel Single-Crystal Electron Beam Welds.</b>	2047-2058A			<i>Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. II. Finite-Element Analysis.</i>	411-420A
<b>Analysis of Solidification Microstructures in Fe—Ni—Cr Single-Crystal Welds.</b>	2795-2804A			<b>Bauschinger Effect and Residual Phase Stresses in Two Ductile-Phase Steels. II. The Effect of Microstructure and Mechanical Properties of the Constituent Phases on Bauschinger Effect and Residual Phase Stresses.</b>	725-732A
<b>The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.</b>				<i>The Composition and Temperature Dependence of the Mechanical Properties of Tungsten Alloys.</i>	744-748A
<b>Microstructure of Welded and Weld-Simulated 3Cr—1.5Mo—0.1V Ferritic Steel.</b>				<i>The Effect of Matrix Reinforcement Reaction on Fracture in Ti—6Al—4V-Based Composites.</i>	1579-1587A
<b>Solidification Microstructures and Phase Transformations in Al—Ti—Si—Mn Deoxidized Steel Weld Metals.</b>				<i>Effect of Threshold Stress Intensity on Fracture Mode Transitions for Hydrogen-Assisted Cracking in AISI 4340 Steel.</i>	2577-2583A
<b>Welding</b>	45-57A			<i>Tensile and Impact Properties of Directionally Solidified Fe—40Al Intermetallic.</i>	3027-3028A
<b>Fluid Dynamics of a Stationary Weld Pool.</b>				<i>Large-Strain Bauschinger Effects in FCC Metals and Alloys.</i>	3201-3213A
<b>Welding electrodes</b>		3221-3236A	<b>Yield strength, Deformation effects</b>	<i>Laboratory Simulation of Seamless Tube Piercing and Rolling Using Dynamic Recrystallization Schedules.</i>	153-164A
<b>Effect of Rare Earth Metal Oxide Additions to Tungsten Electrodes.</b>				<i>Experimental Assessment of Structure and Property Predictions During Hot Working.</i>	3101-3114A
<b>Welding parameters</b>		600-603B	<b>Yield strength, Microstructural effects</b>	<i>Tensile Properties of Short Fiber-Reinforced SiC/Al Composites. I. Effects of Matrix Precipitates.</i>	401-410A
<b>Modeling of Interfacial Phenomena in Welding.</b>		1753-1766A		<i>Estimation of the Yield Strength of Metals From Crystal Defect Energies.</i>	1719-1723A
<b>Microstructure of Stainless Steel Single-Crystal Electron Beam Welds.</b>		1767-1782A			
<b>Analysis of Solidification Microstructures in Fe—Ni—Cr Single-Crystal Welds.</b>		2009-2019A			
<b>The Effect of Alloy Composition and Welding Conditions on Columnar-Equiaxed Transitions in Ferritic Stainless Steel Gas-Tungsten Arc Welds.</b>					
<b>Weldments, Mechanical properties</b>					
<b>Effects of Heat-Affected Zone Peak Temperatures on the Microstructure and Properties of 2090 Aluminum Alloy.</b>					
<b>Welds</b>					
<i>See</i> Welded joints					
<b>Wetness</b>					
<i>See</i> Moisture content					
<b>Wettability</b>					
<i>The Infiltration of Aluminum Into Silicon Carbide Composites. Infiltration of Fibrous Preforms by a Pure Metal. III. Capillary Phenomena.</i>	475-485B				
<i>Corrigenda and Comments on the Infiltration of Fiber Preforms.</i>	2257-2263A				
	2287A				
<b>Wettability, Alloying effects</b>		349-355B			
<i>Thermodynamics of Titanium in Ag—Cu Alloys.</i>					
<b>Wettability, Coating effects</b>		1745-1751A			
<i>The Effect of Carbon on Wetting of Aluminum Oxide by Aluminum.</i>					

**Yield strength**

New Aspects on the Superplasticity of Fine-Grained	7475
Aluminum Alloys.	2729-2737A
Composite Ferrous Powder Metallurgy Structures: Mechanical Properties and Stress Analysis.	2943-2955A

**Yield stress**

See Yield strength

**Youngs modulus**

See Modulus of elasticity

**Yttrium, Corrosion**

Corrosion of Mo, Nb, Cr and Y in Molten Aluminum.

2919-2928A

**Yttrium compounds, Mechanical properties**

Mechanical Properties of Alloys of IrNb and Other High-Temperature Intermetallic Compounds.

3063-3074A

**Zinc, Casting**

On the Heat Transfer to the Wheel in Planar-Flow Melt Spinning.

279-283B

**Zinc, Diffusion**

Bircrystal Studies of Diffusion-Induced Grain Boundary Migration in Cu/Zn.

2363-2367A

**Zinc, Extraction**

Study of Moisture Transfer During the Strand Sintering Process.

37-47B

Fundamental Studies on Chlorine Behavior as Related to Zinc Electrowinning From Aqueous Chloride Electrolytes. Oxidative Ammonia Leaching of Pure Zinc Sulfide in the Presence of Lead Compounds.

251-258B

Competitive Solvation and Complexation of Cu(I), Cu(II), Pb(II), Zn(II), and Ag(I) in Aqueous Ethanol, Acetonitrile, and Dimethylsulfoxide. Solutions Containing Chloride Ions With Applications to Hydrometallurgy.

402-404B

Oxidative Leaching of an Offgrade/Complex Copper Concentrate in Chloride Lixivants.

439-448B

Mathematical Models of Current Losses in Bipolar Cells. Kinetics of the Dissolution of Zinc Sulfide in an Oxidizing Slag.

783-790B

The Reduction of Zinc From Slags by an Iron—Carbon Melt. The Use of Rotating Electrodes in the Electrolysis of Molten Zinc Chloride Electrolytes.

867-872B

The Use of Rotating Electrodes in the Electrolysis of Molten Zinc Chloride Electrolytes.

885-897B

977-985B

**Zinc, Mechanical properties**

Estimation of the Yield Strength of Metals From Crystal Defect Energies.

1719-1723A

**Zinc, Solubility**

Modeling of Collision and Coalescence of Droplets During Microgravity Processing of Zn—Bi Immiscible Alloys.

59-68A

**Zinc base alloys, Mechanical properties**

Interface Sliding, Migration, and Cracking During Fatigue Deformation of Superplastic Aluminum—Zinc Eutectoid Alloy.

2497-2504A

Effect of Impurity Content on Cavitation in the Superplastic Zn—22Al Alloy.

2605-2608A

**Zinc base alloys, Metallography**

A Mossbauer Study of Zinc—Iron Intermediate Phases and Electrodeposited Coatings.

273-277A

**Zinc base alloys, Microstructure**

The Effect of Fatigue Deformation on Microstructural Evolution in a Superplastic Aluminum—Zinc Eutectoid Alloy.

2505-2511A

**Zinc plating**

The Effects of Lead on the Electrochemical and Adhesion Behavior of Zinc Electrodeposits.

81-86B

**Zircon, Composite materials**

Energetics of Particle Transfer From Gas to Liquid During Solidification Processing of Composites.

2073-2082A

**Zirconium, Alloying elements**

Effects on Microstructure and Tensile Properties of a Zirconium Addition to a Cu—Al—Ni Shape Memory Alloy.

741-744A

**Zirconium, Powder technology**

Nanocrystalline Metals Prepared by High-Energy Ball Milling.

2333-2337A

**Zirconium base alloys, Corrosion**

Effects of Crack Tip Stress States and Hydride-Matrix Interaction Stresses on Delayed Hydride Cracking.

2905-2917A

**Zirconium base alloys, Irradiation**

Radiation Effects on Time-Dependent Deformation: Creep and Growth.

1053-1063A

Residual Grain-Interaction Stresses in Zirconium Alloys.

1083-1095A

Irradiation as a Tool for Studying Solid-State Amorphization Phenomena.

1809-1815A

**Zirconium compounds, Irradiation**

Amorphization in Zr<sub>2</sub>Al Irradiated With 1 MeV e<sup>-</sup> and Kr<sup>+</sup>.

1799-1808A

**Zirconium compounds, Phases (state of matter)**

Solid-State Diffusion Reaction and Formation of Intermetallic Compounds in the Nickel-Zirconium System.

2897-2903A

**Zone melting**

Dendrite Arm Climb by Temperature Gradient Zone Melting During Solidification of a High-Speed Tool Steel.

264-266A

Purification of Tin by Zone Refining With Development of a New Model.

455-461B

**Zone refining**

See Zone melting

